Working with RHINO

A Handbook for Using Syndromic Surveillance Data in Washington State

RHINO
Rapid Health Information NetwOrk

Washington State Department of Health

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For more information, contact the RHINO Program (DOH)
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Using This Guidebook

Getting Started with RHINO Data

Why a guidebook?

This guidebook is intended to be both an introduction to using RHINO data and an overview of the ESSENCE platforms in which most of our users interact with RHINO data. This guidebook grew out of our desire to have a single place where users could turn for common needs, such as standard practices for monitoring influenza-like illness or building a report template.

What other resources are available?

RHINO has a Community of Practice SharePoint site with a variety of additional resources in its library. Additionally, there is a section of the Appendix with more resources from RHINO and other organizations like the International Society for Disease Surveillance.

What if I have more questions?

While we have tried to make the guide both intuitive enough for a novice user and comprehensive enough to support expert-level analysis needs, it is possible that you will have additional questions or need assistance from RHINO staff. If that is the case for you, we offer in-person trainings, bimonthly surveillance topic calls, and quarterly ESSENCE skills webinars, as well as maintaining a GoToMeeting account for impromptu screen-sharing to walk through issues as they arise. Please do not hesitate to contact us if you need additional help or are looking for resources.

Understanding RHINO Data

Syndromic Surveillance and RHINO

About Syndromic Surveillance

Syndromic surveillance is a near real-time, population-based, all-hazards surveillance system. It is the real-time collection, analysis, interpretation, and dissemination of health-related data to enable the early identification of the impact of potential human or veterinary public health threats, which require effective public health action. Syndromic surveillance is often interpreted in combination with other information and is not intended to be a standalone surveillance system.

Originally intended for bioterror detection, syndromic surveillance data are now used to monitor and assess a wide variety of public health issues including communicable diseases, interpersonal violence, and drug overdose events. Local, state, federal, and international cooperation continually expands the list of use cases for the data.

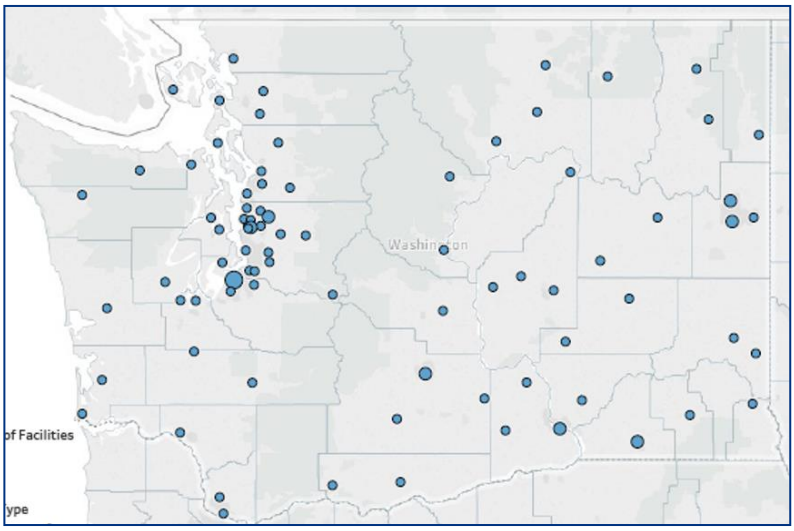
About RHINO

At the Washington State Department of Health, the Rapid Health Information NetwOrk (RHINO) program gathers, maintains, and disseminates Washington's syndromic surveillance data and is the only source of our outpatient data and one of two for emergency department data. Syndromic surveillance's characteristics and data sources make it unique among Department of Health databases. For more information, please see the data elements and data sources sections of this guidebook.

Facility onboarding

All of Washington State's emergency departments are required to participate in syndromic surveillance reporting in accordance with RCW 43.70.057. Additionally, many primary and specialty clinics voluntarily submit data.

Data validation is ongoing and RHINO staff send regular updates as more facilities become available. To the right is a map of the locations of Washington's emergency departments by ZIP Code.



RHINO's onboarding page for facilities is located here. You can find tables of hospitals and clinic groups available in NSSP ESSENCE in the back of this guide. If you have questions about a specific facility in your jurisdiction, please contact the Syndromic Surveillance Mailbox.

Potential Use Cases for RHINO Data

As an all-hazards surveillance system, syndromic data are a versatile tool for monitoring population health. Some sample use cases from Washington and around the country are below.

- Adult falls: monitor emergency department visits for falls among patients aged 65 years and older. Use triage notes to contextualize visits.
- **Emergency department care utilization:** identify trends in potentially avoidable emergency department visits across age groups.
- Exposure during extreme weather events: monitor visits potentially associated with extreme weather events, including temperature and wind-based events.
- **Gastrointestinal illness:** identify visits for gastrointestinal illnesses, including those associated with foodborne illness outbreaks.
- Influenza-like illness: monitor trends in both emergency department and outpatient clinic visits for influenza-like illness. Stratify emergency department visits by patient class to identify hospitalizations. Stratify by facility to view localized trends or trends by facility type.
- Motor vehicle collision injuries: identify visits for motor vehicle collision injuries at both emergency departments and outpatient clinics. Use triage notes to contextualize visits.
- Respiratory illness during poor air quality events: Monitor visits in both emergency department and outpatient clinics for a variety of conditions potentially associated with poor air quality events. Contact RHINO for access to a purpose-built wildfire surveillance dashboard.
- Sexual assault: monitor emergency department visits for sexual violence. Use triage notes to contextualize visits.
- Suicide and self-harm: Identify visits for suicidal ideation, suicide attempts, and self-harm behaviors. Use triage notes to contextualize visits.
- **Valley fever (coccidioidomycosis):** Identify symptoms and diagnoses for Valley Fever. Link with environmental data to identify areas of particular risk.

RHINO Community of Practice

To facilitate cooperation between local health jurisdictions (LHJs) and other public health and interested organizations using RHINO data, we maintain a Community of Practice for data users to collaborate. We also host bimonthly webinars on syndromic surveillance topics, facilitate quarterly ESSENCE skills webinars, and offer site-visits for ESSENCE training by request. There is also a SharePoint site for members with resources on RHINO data and relevant updates.

Anyone is welcome to use the Community's resources. If you would like to participate in the Community of Practice or any of its workgroups, please contact RHINO.

Data Best Practices and Limitations

Clinical Data Best Practices

All users should have a basic understanding of RHINO data to be able to use it effectively. **You don't need to be an epidemiologist to use sound science!**

- Always consult with other jurisdictions when using their data, whether at the state, tribal, or local health level. Solicit their expertise regarding local trends and health issues. If you do not have a contact for the other partners included in your data, RHINO can help facilitate a connection.
- Whenever possible, RHINO encourages you to collaborate with hospitals and clinics. They may have additional context regarding trends and workflows, which could enhance your analysis. If you do not have a contact for the facilities in your data, RHINO can help facilitate a connection.
- Consider alternative explanations for the trends you observe. Consult with subject matter experts and the literature on the health issue to see if your data align with expected trends.
- Know what is normal for your data.
    - Know the formats of diagnoses. Do they provide one diagnosis or multiple? Do they include the decimal point in their ICD-10 codes?
    - Know the formats of chief complaints. Do your facilities report a single term, standardized terms, or free text?
    - Which optional data elements do your facilities report (e.g., triage notes, procedure codes, clinical impression)? How complete are they?
- Check that your syndrome definitions and queries are appropriately calibrated for the question you would like to answer. Invite collaboration with colleagues.
- Know which of your facilities are sending production-quality data and when they were promoted to NSSP ESSENCE from the staging environment. Watch for new facilities validating their data, which will become available soon, potentially changing visit volumes if you are querying based on counts.
- Know which kinds of facilities you have (e.g., emergency department, inpatient, outpatient, ambulatory, primary, and specialty care).
- Know the reporting patterns of your data. Do facilities send their visits every hour or every 24 hours? Weekly counts may give you a more stable picture than daily counts because of reporting procedures. Remember counts from the most recent weeks may not yet be complete.
- Use counts and percentages. After you query, check that counts are the expected magnitude and have not changed dramatically. If counts are much higher or lower than expected, you may need to modify your query parameters. As a result of this potential variability, consider using percentages instead of counts as they can provide more stable trend information.
- Establish and maintain relationships with your facilities. Knowing your data providers will increase the likelihood both that you are informed of potential changes in the data (e.g., data drop-offs, implementation of pick lists) and of successful collaborations during an outbreak.
    - Let your facilities know you use and value their data!
- View RHINO data as a tool in your public health surveillance and preparedness toolbox, rather than as a standalone.
    - Syndromic surveillance data are not cleaned or curated. It reflects data, which are entered into the electronic medical record for purposes of patient care (rather than surveillance or research). It is made available as it is sent from facilities and, consequently, can be noisy or occasionally lead to inaccurate conclusions.
- RHINO data is appropriate for:
    - Generating hypotheses,
    - Strengthening information gathered from other sources,
    - Investigating rumors or interventions, and
    - Conducting preliminary assessments of the health effects of an emergency.

Clinical Data Limitations

- Data drop offs are common. Data are frequently missing for brief periods (1-2 days) and occasionally for longer (weeks to months).
- Data are highly variable in areas like reporting timeframe, electronic health record vendor, facility types, quality of data reported, and variables included. Data may change because of changes internal to the facility, which may not be communicated or readily apparent to public health.
- Data are always preliminary. Because it is real-time, it fills in over time and it is difficult to know if you have a complete dataset. Using a longer time resolution or limiting to visits, which occurred a week or more in the past, may provide more stability.
- Availability of information will often depend on patient types and clinical workflows. For example, inpatient diagnoses will likely be more delayed as this information is typically not available until after a patient is discharged.

School Absenteeism Data Best Practices

- School absenteeism data do not contain health or identifiable information. Because of this, they are publicly releasable and do not require aggregation.
- To better understand the data, speak with RHINO staff and your local school districts. The school districts, in particular, may be able to provide information to better understand patterns in the data (e.g., school camps and holidays).

School Absenteeism Data Limitations

- Not all school districts are included in the data, only those that report to the Washington School Information Processing Center. Some of the larger school districts (e.g., Seattle) are not included.
- RHINO receives all-cause absence counts, which includes both excused and unexcused absences. Although there may be an association between absences and illness, it is not possible to determine causation from this dataset.
- Some school districts routinely have high baseline absenteeism (15-20%). Each school district's baseline is different; consulting with the school district may help alleviate some of this uncertainty.
- Weekends, holiday breaks, and other scheduling changes will appear in the data. You will need to account for their associated absenteeism levels in your analysis.

Accessing RHINO Data

Data Release Framework

Requesting Access to RHINO Data

- The guidelines contained here reflect typical practice, but RHINO staff are available to discuss exceptions to them, including research projects which do not require staff time to pull data and evaluations with IRB approval that necessitate more identifiable patient information (e.g., name).
- If you would like access to RHINO data for your public health work, please review the framework below and submit the RHINO data request form and confidentiality agreement to the Syndromic Surveillance mailbox. Your organization will also need to enter into a data sharing agreement with RHINO.
    - RHINO also maintains a more detailed flow chart for our data release policies.
    - Users may only use the MRN field to identify a patient when investigating a notifiable condition or public health threat.

<table>
<tr><th colspan="7">Data Release Framework</th></tr>
<tr><th>Requestor</th><th>Intended Purpose</th><th>Process for Access</th><th>Data Provided</th><th>Method of Access</th><th>IRB Approval Needed</th><th>Cost</th></tr>
<tr><td>Washington State Department of Health</td><td rowspan="5">Surveillance, community health assessment, program evaluation</td><td rowspan="6">Data sharing agreement, RHINO data request form; confidentiality agreement</td><td rowspan="2">Aggregate or line-level data from Washington State</td><td rowspan="6">Periodic data pulls, NSSP ESSENCE account, or custom report</td><td rowspan="3">No</td><td rowspan="3">No charge for access</td></tr>
<tr><td>Local and Tribal health</td></tr>
<tr><td>Other public health partner organization</td></tr>
<tr><td>Data providers</td><td rowspan="2">Aggregate counts or line-level details of relevant visits</td></tr>
<tr><td>Public health agency outside of Washington</td></tr>
<tr><td>Researcher</td><td>Research as defined in RCW 42.48</td><td>Case-by-case</td><td>Yes</td><td rowspan="2">Hourly charge</td></tr>
<tr><td>Public Records Request</td><td>Public information</td><td>Identifiable data is exempt from public records requests</td><td>Aggregate data as appropriate</td><td>Data pulled by RHINO staff</td><td>No</td></tr>
</table>

- "Researchers" includes students who are interested in using RHINO data for their work.
    - All research requires consent or exemption from an institutional review board (IRB). Researchers may use an IRB from their state, territory, or providence of residence.

- "Public health agencies outside of Washington" includes other state, federal, territorial, and provincial health authorities.
- "Other public health partner organization" includes groups like the Washington Poison Control and the Washington State Hospital Association who intend to use RHINO data as part of their public health practice.
- RHINO data are not subject to public records requests under RCW 43.70.057.

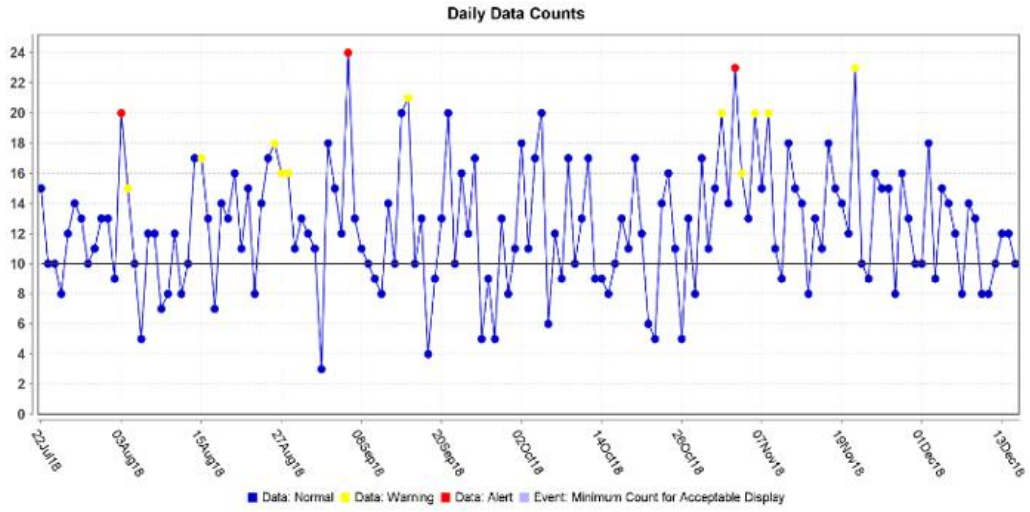
Publishing Guidelines

Quick Tips and Reminders

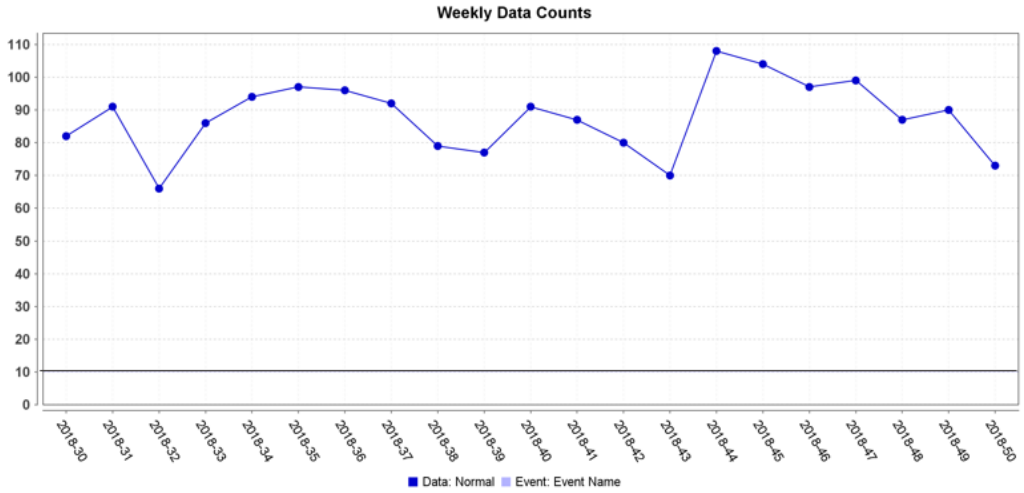
It is acceptable to publish data in presentations, newsletters, and peer-reviewed journals. However, precautions must be taken to protect patient privacy. The ***RHINO team must approve publications for peer-review and presentations before submission*** and you should attribute the data to RHINO**.** The guidelines below apply to use of RHINO data for public release, not internal practices. A decision tree is included in the appendices of this guidebook.

- Local Health Jurisdictions (LHJs) should not publish data including residents of other jurisdictions without consulting those jurisdictions.
- When possible, avoid publishing data from a single facility.
    - If only a single facility is relevant or eligible for your publication, please publish using visit percentages or rates per 10,000 visits instead of counts to protect patient confidentiality.
- RHINO encourages you to collaborate with the facilities included in your analysis.
    - Notification – Media, government, and government affairs staff at hospitals would welcome reviewing publications before submission. This could also represent an opportunity to coordinate messaging about press releases.
    - Preview period – It is good practice to give hospitals enough time to review the data so they can ask questions and offer additional context before submission.
    - Data details – It may be helpful to provide your hospital partners with the data details of the encounters you are including in your analysis. ESSENCE has APIs for the data details of every query that may be used for this purpose.
- As much as possible, aggregate data. Elongating the time resolution (e.g., weekly to monthly) of your query may facilitate this.
- Suppress all non-zero numbers less than 10. Counts less than 10 may be represented as "<10" in tables or reports.
- Suppress rates or percentages derived from counts less than 10.
- Assure that suppressed cells cannot be recalculated through subtraction, by using secondary suppression as necessary.
- If presenting information regarding an outbreak, you may publish numbers <10 provided the publication is a response to:
    - A cluster investigation with intense public interest (e.g., AFM), OR
    - An outbreak of a communicable disease or other all-hazards incident in which the public must be aware of specific risks which may be in their community
    - In these cases, DOH recommends reporting only the person's gender and decade of age or that they are a minor.

The graph below shows daily counts of visits over a period in 2018 (intentionally unlabeled to protect patient confidentiality). The dark grey line across the graph indicates dates for which ESSENCE captured at least 10 visits. Because several time points do not meet this minimum threshold, the dates cannot be displayed as counts, rates, or proportions according to the Department's small numbers publication guidelines.



Thankfully, it is easy to correct this issue and create visualizations that are acceptable for public disclosure! The first option is to change the **time resolution** from daily to weekly counts. You can do this easily in the Query Portal. As we can see below, this change increases the visit counts far above the minimum threshold.



Had this change not sufficiently increased our visit counts to meet publication guidelines, alternative solutions might include removing some limiters (e.g., age groups or sex), further increasing our time resolution (e.g., to monthly counts), or shifting the time window we display to one with higher visit counts. For more information on publication standards, please see our Small Numbers Publication Decision Tree.

Linking Guidelines

Linking RHINO Data with Other Datasets

In order to protect public health, authorized users may link RHINO data with data from other sources. Linking may not be done for purposes of commercial gain or levying criminal prosecution. Any linked dataset containing RHINO data elements are subject to the terms of the RHINO Data Sharing Agreement, similar agreements governing datasets to which you are linking RHINO data, and all state and federal laws that govern any included datasets.

Fields that may be available for linkage include patient first and last name, ZIP Code, sex, date of birth or age, facility name, visit date and time, and medical record number. Access to this information requires a custom data pull by RHINO staff, which can be requested through submission of a RHINO data release form. If you have questions about the feasibility or acceptability of linking RHINO data, please contact the RHINO program.

Below are some situations in which it would *potentially* be acceptable to link RHINO data with outside datasets for public health. The list is not exhaustive and is intended to give a variety of examples that may be relevant for RHINO data users. If you do not see an example relevant to your work below, please contact RHINO to discuss the possibility of your request.

- **Access to care:** linking with clinical data from comparable communities to monitor the equitable distribution of care across counties.
- **Data quality improvements:** linking with data from Indian Health Services (IHS) clinics to determine the scope of racial misclassification and characterize the errors.
- **Drug overdose:** linking with prescription management data to identify providers who have prescribed medications to patients with multiple overdose incidents.
- **Emergency preparedness:** linking with paramedic data to provide situational surveillance.
- **Healthcare costs:** linking with insurance payment information to monitor healthcare costs for quality improvement.
- **Injury surveillance:** linking RHINO data with other clinical records to monitor injuries like adult falls or pediatric near-drowning events.
- **Motor vehicle collision injuries:** linking with law enforcement vehicle crash and toxicology information to obtain a better understanding of the collisions and identify targets for improvement (e.g., dangerous intersections).
- **Occupation injuries:** linking with worker's compensation claims to identify pesticide exposures.
- **Program outcomes:** linking with school-based health clinic data to evaluate the outcomes of school-based health clinic services.

Interacting with RHINO Data

Data Sources and ESSENCE Platform Comparison

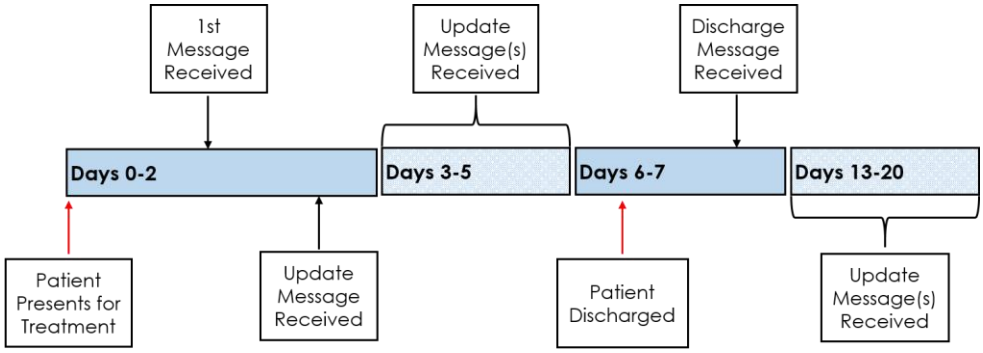
About RHINO Data

Syndromic surveillance in Washington State has grown since its launch in 2003. Under RCW 43.70.057, all Washington State emergency departments must report syndromic data to the Department of Health. RHINO data incorporates a variety of data elements from several sources to provide a flexible, population-level picture of public health in the state.

Syndromic Surveillance Clinical Data System Comparison		
Characteristic	Current Syndromic Surveillance	Legacy Syndromic Surveillance
Care Setting	Current emergency departments; acute care hospitals; primary, urgent, and specialist care clinic data	Emergency departments, urgent care clinics
Participation	100% of emergency departments, more than 2,500 outpatient clinics*	Approximately 25% of emergency departments
Number of Required Fields	39	9
Number of Optional Fields	34	2
Content	Expanded content provides richer data on clinical care, health outcomes, and better data tracking	Basic visit, clinical, and patient information
Diagnosis	Required, coded	Optional, free-text, or coded
System	NSSP ESSENCE	Washington ESSENCE
Time frame for clinical data	2016 to present	2006 to 2019
Additional non-clinical data	Weather data from National Weather Service (NWS) stations, air quality data from National Oceanic and Atmospheric Administration (NOAA) stations	School Absenteeism from the Washington School Information Processing Center (WSIPC)

Example Information Flow Timeline

The graph below shows an example of how a patient record may fill in over time as more information is added to it and the additional messages are batched to the RHINO program.



Data Elements and Timeline

The tables below give a sample of data elements RHINO gathers for clinical visits.

Required Data Elements				
Facility Information	**Visit Information**	**Patient Demographics**	**Clinical Information**	**Other**

• Name
• Address
• Type:
  ○ Primary Care
  ○ Specialty
  ○ Urgent Care
  ○ Emergency
  ○ Inpatient
	• Visit Date/Time
	• Patient Class
	  ○ Emergency
	  ○ Inpatient
	  ○ Outpatient
	  ○ Obstetric
	  ○ Observation
	  ○ Recurring
	  ○ Pre-Admit
	  ○ Direct Admit
	• Discharge Date/Time
	• Discharge Disposition
		• Age*
		• Gender*
		• Race*
		• Ethnicity*
		• ZIP Code*
		• County*
		• State*
		• Country*
			• Chief Complaint/Reason for Visit*
			• Admit Reason (inpatient)*
			• Diagnosis*
			• Diagnosis Type*
			  ○ Admitting
			  ○ Working
			  ○ Final
			• Procedure Codes
			• Procedure Date/Time
			• Triage Notes
			• Clinical Impression
			• Death (Y/N)*
			• Death Date/Time*
				• Date of Birth
				• Patient Name
				• Unique Patient ID (e.g., MRN)
				• Unique Visit ID

*Required to be reported if collected in the patient's Electronic Medical Record				

Optional Data Elements				
Facility Information	Risk Factors	Clinical Information	Vital Signs	Other
• Hospital Unit/Service Location • Assigned Patient Location	• Smoking Status • Height • Weight	• Acuity • Diagnosis Date/Time • Onset Date • Lab Orders/Results	• Temperature • Pulse Oximetry • Blood Pressure	• Insurance Information • Unique Physician ID

Key Data Elements to Support Surveillance

Data Elements		Description
Geography	Region	Regions in ESSENCE are made up of groupings of ZIP Codes, which roughly correspond to our counties in Washington State. When using the Patient Location data sources, region will refer to the region where the patient lives. When using the Facility Location data source, it will refer to the region where the facility at which the patient sought care is located.
	State	If you would like to limit to visits only by Washington State residents, you may do so using the State parameter in ESSENCE so long as you are also using a Patient Location data source. If you have access to more than one site or state's data in ESSENCE, you may use this field to limit your query to only visits at Washington State facilities when you are using a Facility Location data source.
	ZIP Code	As with other geographic parameters, this data element will limit your query to either the residential ZIP Code of the patient (if using a Patient Location) data source or to the ZIP Code where the facility is located (if using a Facility Location data source).
	ZIP Code (Other Fields)	In addition to simply limiting your query by ZIP Code as described above, you may also limit your query to ZIP Codes for which a specified racial or ethnic group percentage of the population or be the percentage of the population or which fall into a specified income range. For example, you could limit your query to ZIP Codes in which at least 50% of the population is Asian or where the median income is below $32,000. Please note that the thresholds built into ESSENCE for these parameters are based on US Census Data, but not necessarily the most recent data releases.

	Site	Site refers to the entity, which is submitting data to NSSP. This is often a state, but may be a county or grouping of counties. If you have access to data from multiple sites and would like to limit to a subset of them, you might use the Site filter.
	Miles from Home	Limit your query to visits for which the patient travelled a specified distance from the center point of their residential ZIP Code to the center point of the ZIP Code where the facility is located using the operators equal, does not equal, less than, less than or equal, greater than, greater than or equal, and between.
Facility Information	Facility	You may limit your query to specific facilities using the Facility data element. This may be helpful if you know a particular patient of interest was seen at a specific facility (e.g., investigating a notifiable condition) or if you are only interested at visits which took place at a specific facility. For more information about facilities and naming conventions, see that section of this guidebook.
	Facility Type	You may also limit your query to specific facility types (e.g., only primary care or emergency department visits) using the Facility Type parameter in ESSENCE. Note that facilities with multiple practice types may not be included in your query results depending on what you choose and their practice type. For example, choosing primary care as your facility type will not include facilities, which also provide urgent care. More information is available here.
Patient Age	Age Group	Limit your query to either include or exclude patients in specific age groups or those for whom age is currently unknown. Age groups are 00-04, 05-17, 18-44, 45-64, 65+, and unknown.
	ILI Reporting Age Group	Limit your query to either include or exclude patients in specific age groups or those for whom age is unknown in age groups established by the CDC for Influenza-like illness (ILI) reporting. Age groups are 00-04, 05-24, 25-49, 50-64, 65+, and unknown.
	Ten Year Age Group	Limit your query to either include or exclude patients in specific age groups or those for whom age is unknown in 10-year increments. Patients 80 years and older are combined into 80+.
	School Age Group	Limit your query to specific age groups which approximate school ages. Age groups are 00-04, 05-11, 12-17, 18-25, 26-34, 35-44, 45-54, 55-64, and 65+.
	Age Range	Limit your query to patients in a specific age range using the operators equal, does not equal, less than, less than or equal, greater than, greater than or equal, and between.

Patient Demographics	Patient Sex	Limit your query to either include or exclude patients of a specific sex. You may also limit your query to patients for whom sex is unknown or unreported. Please note that Washington State facilities can now send male, female, and X as patient sex designations, but ESSENCE does not yet limit by X and we do not yet know how providers are implementing the change.
	Patient Race	Limit your query to either include or exclude patients by race. Limiters for this parameter include American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, "other race," white, and "not reported." Please note that we do not have information about the collection methodologies specific facilities use for gathering this information, but we are able to receive more than one classifier for a given patient where that is present in the clinical record.
	Patient Ethnicity	Limit your query to either include or exclude patients by ethnicity. Limiters include Hispanic or Latino, Not Hispanic or Latino, and "not reported." Please note that we do not have information about the collection methodologies specific facilities use for collecting this information.
Chief Complaint and Discharge Diagnosis	Chief Complaint (Original)	Create custom queries using key words from the *original* chief complaint text. Please note that the original chief complaint is sometimes incorrect (e.g., for sexual assault where the patient did not feel comfortable disclosing what occurred) or may be "uninformative" (e.g., a room number). In these circumstances, you may not be able to identify all desired visits using this field.
	Chief Complaint History	Create custom queries using key words from all chief complaint updates. This is the field, which RHINO recommends using for searching records based on chief complaint text.
	Discharge Diagnosis	Create custom queries using ICD-10 diagnostic codes present in the patient record. Because some facilities do not include the decimal point in their coding (e.g., T40.1 vs T401), you must include the codes written both ways in your query syntax.
	Diagnosis Combo	View each diagnostic code present in the discharge diagnosis field parsed with its meaning. This may be particularly useful for identifying less familiar codes which are present in your captured visits output. For example, "A28.0 Pasteurellosis; W55.01XA bitten by cat, initial encounter; S61.451A open bite of right hand, initial encounter."

	CC and DD	Create custom queries using key words in a field, which combines the original chief complaint and the discharge diagnosis. Note that, as described above, using the original chief complaint text may not return all desired visits. In lieu of using this field, RHINO staff general apply the query syntax to both the Chief Complaint History and Discharge Diagnosis fields (in addition to others when appropriate).
	CC and DD Category	CC and DD Category allows the user to identify visits using pre-made queries built by other users and indexed in ESSENCE. More information about CC and DD Categories is available on the CC and DD Categories page of NSSP ESSENCE.
Other Clinical Information	Clinical Impression	Create custom queries using free text and diagnostic codes, which may be present in the clinical impression field of the patient record. The clinical impression field is generally used by a clinician for notes regarding the patient's condition and relevant historical information, making it similar to the chief complaint and triage notes fields. For example, "pt states mid/L upper abd pain started yesterday with vomiting. States hx of pancreatitis."
	Triage Notes Original	Create custom queries using key words, which may be present in the triage notes field. The richness of reporting standards varies widely across facilities and facility networks, with some providing a workup of the Social Determinants of Health and others only cursory clinical information. Regardless, the field is valuable for validating queries and often for understanding the context of what led a patient to need care for their condition.
	Procedure Code	Create custom queries using procedure codes present in the clinical record. Please note that this field was not available from all hospitals prior to March 2020.
	Procedure Combo	View each procedure code present in the Procedure Code field parsed with its meaning. This may be particularly useful for identifying encounters with COVID testing, intubation, or mechanical ventilation. Please note that this field was not available from all hospitals prior to March 2020.

Patient Identifiers	Date of Birth	While you cannot search for visits in ESSENCE by date of birth, you can view it in the data details output. The field may be cross-referenced with WDRS when appropriate. For notifiable conditions case-finding, it is acceptable to contact the facility for more information. Facilities will generally require that you provide both the MRN and date of birth. Please note that this field was incomplete prior to March 2020.
	Medical Record Number	While you cannot search for encounters using MRN, you are able to view the field in the data details output, which may be useful for case-finding activities. For notifiable conditions case-finding, it is acceptable to contact the facility for more information. Facilities will generally require that you provide both the MRN and date of birth. Please note that this field was incomplete prior to March 2020.
	BioSense ID	Each encounter in ESSENCE has a unique identifier associated with it—the BioSense ID. You are able to create queries using lists of BioSense IDs (separated with commas). For encounters potentially related to COVID, you may also cross-reference the BioSense ID with WDRS where it will be listed as "RHINO ID."
Patient Class	Has Been Fields	RHINO recommends using these fields for limiting your query by patient class. You may query by patients who Have Been Emergency, Have Been Inpatient, or Have Been Outpatient. You may also utilize multiple fields to identify visits which had more than one patient class (e.g., came to the emergency department and were admitted to the hospital). For more information on these fields, see the relevant section of this guidebook.
	Patient Class	Query for records based on the patient's *last reported* patient class for that visit. Note that this field will only look at the most recent patient class, so querying for patients using Emergency will *not* identify patients who were admitted during their visit.

Patient Class

While monitoring all visits for a condition can be informative, it is generally more helpful to view them in smaller, meaningfully divided units. A primary method for that is to stratify by patient class. These distinctions can be particularly important when monitoring conditions like influenza-like illness (ILI) or other times when you are using percent queries and therefore need to be mindful of your query's denominator.

Patient Class	Reference Value
Emergency	E
Inpatient	I
Outpatient	O
Recurring	R
Obstetrics	B
Observation	V

While there are several data fields, which allow you to select specific patient class limiters for your query, the **Has Been** fields are easiest and will include all visits for which have ever had that patient class. The similar **Patient Class** data field is *not* recommended because it will only identify visits for which the *most recent* patient class matches your selection. This means that, if you selected emergency, your query will not show emergency department visits during which the patient was admitted.

The table below details the three **Has Been** fields.

Has Been Emergency	Will display records for visits, which have ever had "emergency" for their patient class during the course of the clinical encounter.
Has Been Inpatient	Will display records for visits, which have ever had "inpatient" as their patient class during the course of the clinical encounter.
Has Been Admitted	Will display records for visits, which have ever had "inpatient" as their patient class during the course of the clinical encounter and/or the discharge disposition indicates the patient was admitted.
Has Been Outpatient	Will display records for visits, which have ever had "outpatient" as their patient class during the course of the clinical encounter.

Facility Type

Another parameter to consider carefully while creating your queries is the facility type. Facility types in RHINO data include emergency departments, inpatient practice settings, primary care clinics, urgent care clinics, and specialty care clinics. Thinking about the types of facilities you are interested in monitoring while creating your query will help limit the output to those visits most relevant to your question.

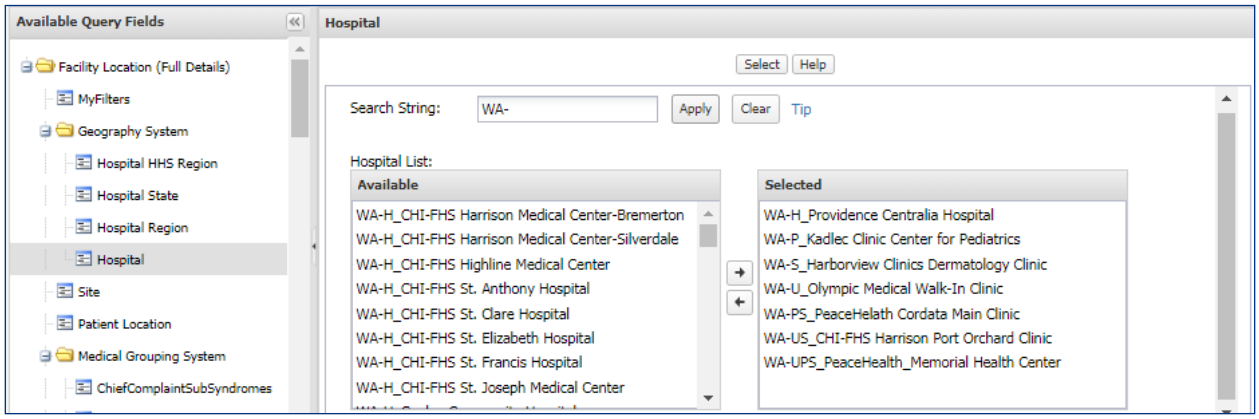
It is important to also remember that facilities may have several practice types (e.g., providing both primary and urgent care services). Note that facilities with multiple practice types may not be included in your query results depending on what you choose and their practice type. For example, choosing primary care as your facility type will not include facilities which also provide urgent care. Lists of currently available hospitals and clinic networks are available in the appendices of this guide.

Facility Type	Care Setting	Patient Classes	Facility Prefixes
Emergency department	Hospital	E, I, R, B, V	WA-H
Inpatient Practice Setting	Hospital	I, B, V	WA-H
Primary Care	Outpatient	O	WA-P, WA-PS
Urgent Care	Outpatient	O	WA-U, WA-UP, WA-UPS, WA-US
Specialty Care	Outpatient	O	WA-S

Facility Names in RHINO Data

To assist you in identifying facilities based on their name, RHINO has developed a standard practice for naming healthcare facilities.

- All Washington State facilities begin with **WA-**
- **Hospitals** begin **WA-H_** (e.g., WA-H_Providence Centralia Hospital)
- **Primary care** clinics begin **WA-P_** (e.g., WA-P_Kadlec Clinic Center for Pediatrics)
- **Specialty care** clinics begin **WA-S_** (e.g., WA-S_Harborview Clinics Dermatology Clinic)
- **Urgent care** clinics begin **WA-U_** (e.g., WA-U_Olympic Walk-In Clinic)
- Facilities with a **combination of practice areas** will begin **WA-PS_**, **WA-UP**, **WA-US_**, or **WA-UPS_** depending on their scope of practice.



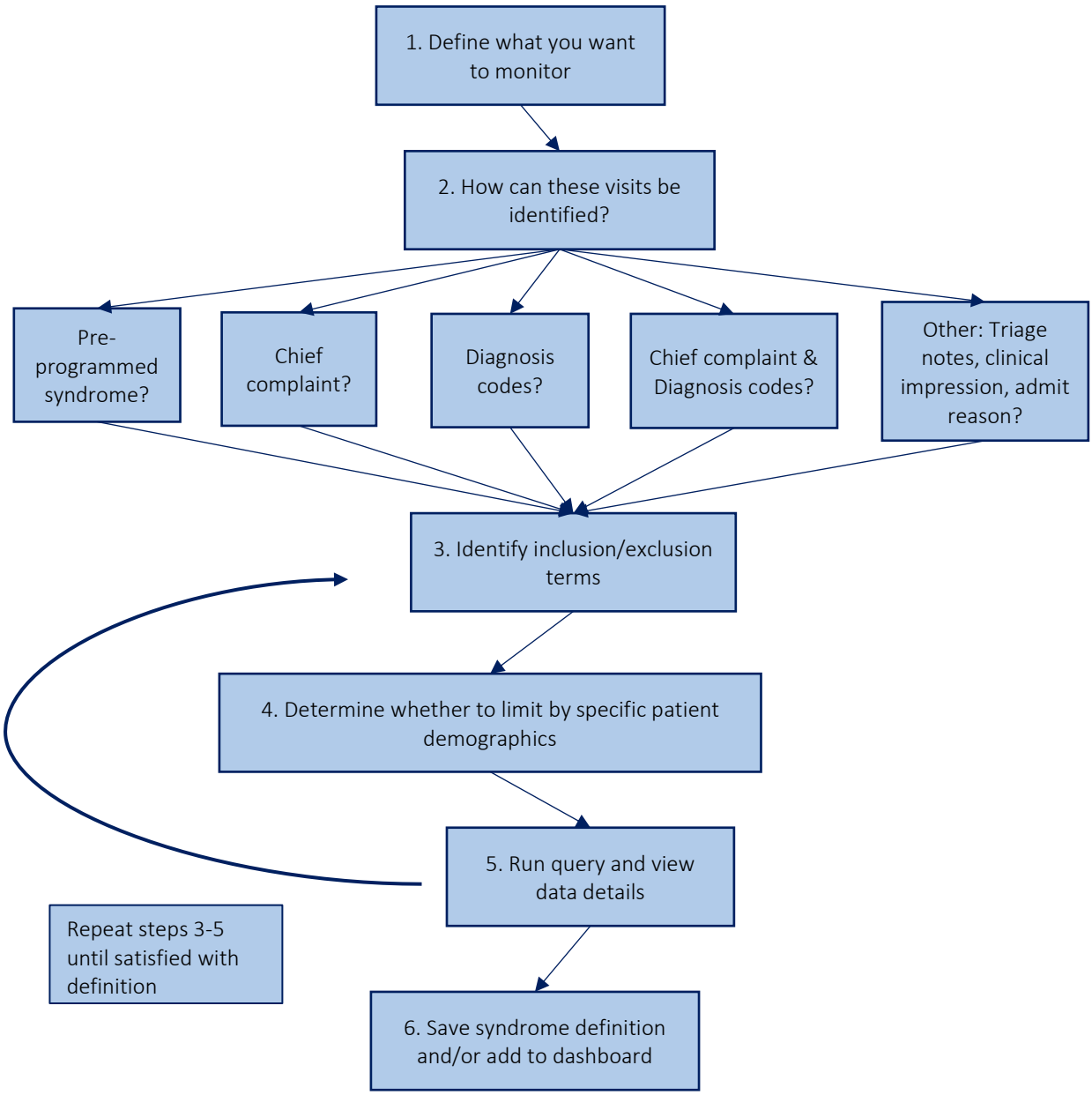
Developing Syndrome Definitions

Steps in Building a Syndrome Definition

There are many methodologies for developing a syndrome definition. RHINO uses the one below and Natasha Close, our lead surveillance epidemiologist, showcased it on the March 2017 Community of Practice call.

- After deciding what you would like to monitor, consider the free-text terms and ICD-10 codes that might appear in the clinical record.
    - There will be tradeoffs between sensitivity and specificity. Consider how much of each you are willing to sacrifice.
    - Review the literature and ICD-10 codes for more information. Query codes in the data to see which are common.
- Once you have established your terms and codes, choose the best place to query for those records.
    - Using a pre-programmed syndrome: pre-programmed syndromes are weighted, validated, and tend to run more quickly. They are also based entirely on chief complaint, which may contain only one term.
    - Chief complaint text can include contextual information, but may have limited specificity. Any custom free-text query is likely to run a bit more slowly and will depend on how many inclusion/exclusion terms and the timeframe evaluated.
    - If using diagnosis codes, consider how detailed you would like your query to be and whether you can wait for your data to be backfilled. Diagnosis codes can be very specific, but are

subject to coding practices and a percentage of visits are missing codes.
    - Querying chief complaint (CC) and discharge diagnosis (DD) allows you to capture more information, but can run slowly and be quite complex.
    - Other data elements, like triage notes, are another option and may include contextual information (e.g., whether a patient was wearing a seatbelt in a motor vehicle collision). These queries may also be slow and complex. Additionally, these fields may be incomplete.
- Consider what other data elements may be relevant for your query (e.g., gender, age, race, patient class). Remember to limit by the correct geography and/or facility.
- Run your query and repeat the steps until you are satisfied.

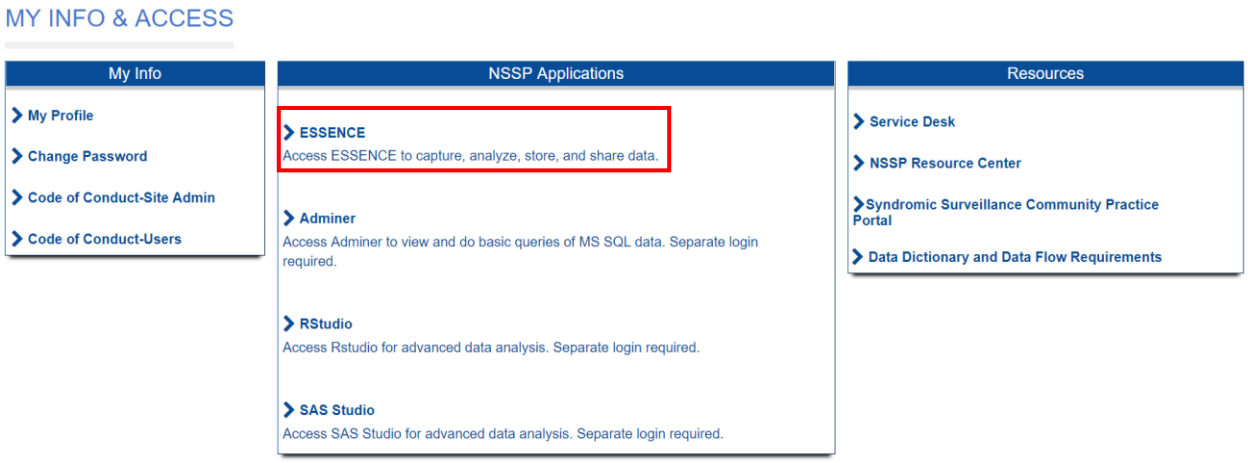


NSSP ESSENCE Fundamentals

Accessing NSSP ESSENCE

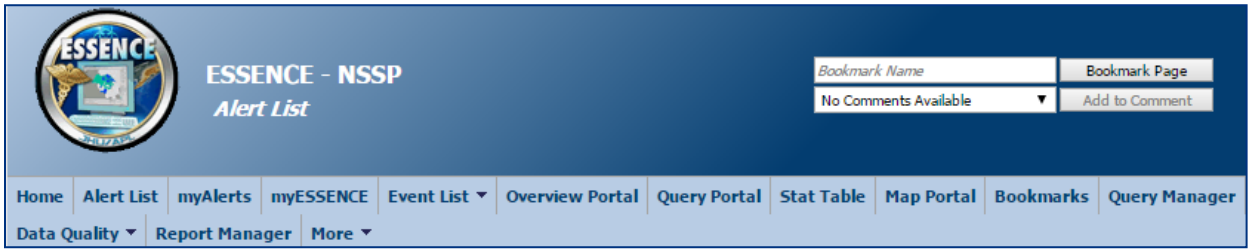
To access the NSSP ESSENCE system you will need to:

1. Navigate to the National Syndromic Surveillance Program's (NSSP) Access and Management Center site.
2. Enter your Access and Management Center (AMC) credentials.
   - These credentials were sent to you in an auto-generated email from NSSP when your account was created.
   - Please note, your NSSP ESSENCE and Washington ESSENCE credentials are not the same.
3. If it is your first time logging into the AMC, you will need to change your password and accept the Code of Conduct.
4. Select ESSENCE from the **NSSP Applications** list.



5. Click the ESSENCE—NSSP (1.20) link.
6. Enter your NSSP ESSENCE credentials.
   - These will be the same as your AMC credentials, but not the same as Washington ESSENCE.
7. NSSP will send you an email reminder every 90 days to reaccept the Code of Conduct and update your password. If you do not update your password or reaccept the Code, NSSP will lock your ESSENCE account.
8. If you need additional assistance, please contact RHINO.

NSSP ESSENCE Homepage



ESSENCE is a powerful platform and intended to be accessible for more than just epidemiologists. Orienting yourself to the navigation ribbon above is an excellent first step to becoming a confident user.

- **Home** – Return to the ESSENCE homepage from anywhere on the site
- **Alert List –** View a tabulated list of NSSP ESSENCE syndrome daily alerts
- **myAlerts –** create, manage, and view customized alerts
- **myESSENCE –** create, manage, and view custom dashboards of your queries
- **Event List –** describe findings warranting further investigation and note your recommendations; document data anomalies
- **Overview Portal –** monitor multiple stratified time series graphs on a single page
- **Query Portal –** perform and save queries
- **Stat Table –** compare syndrome and subsyndrome statistics to previous years and all data contributed to the NSSP
- **Map Portal –** map temporal and spatial alerts
- **Bookmarks –** view bookmarked pages
- **Query Manager –** manage and execute saved queries.
- **Data Quality –** examine and assess data quality metrics like completeness, value mapping, and the status of data processing by facility
- **Report Manager –** create customized reports of time series graphics and maps with interpretative text
- **More –** explore other useful information on ESSENCE and syndromic surveillance including information on pre-defined syndrome definitions and detector algorithms

Expert User Tip

Using your browser's back button in ESSENCE may cause you to lose your work. Instead, use the navigation ribbon to move between tools and open links in new tabs.

Syndromes and SubSyndromes

Syndromes and SubSyndromes in ESSENCE

ESSENCE contains many pre-built queries in the platform. Among them are **syndromes** and **subsyndromes.** In the early development of syndromic surveillance, these syndromes formed the backbone of surveillance work. Although you may find that your capture is better when you compose a custom query (because you can include other data fields), these pre-made queries are often a good place to start and may run more quickly because they are already indexed in ESSENCE. A table of the 12 syndromes included in ESSENCE is below.

Chief Complaint Syndromes		
Bot_like	Hemr_ill	Rash
Exposure	ILI	RecordsOfInterest
Fever	Injury	Resp
GI	Neuro	Shk_coma

Syndromes in ESSENCE are groupings of subsyndromes, which are, in turn, made up of weighted chief complaint terms. A sample of the 132 subsyndromes is included below.

Chief Complaint SubSyndromes		
Abuse	Fall	Legionnaires
AlcoholUse	FeverOrChills	Firearm
COPoisoning	DrowningOrSubmersions	Pertussis
LeadPoisoning	Rash	InfectiousHepatitis

While you may sacrifice nuance by querying with syndromes, there are times when it is helpful to see the percentage of visits for a broad topic like injuries or respiratory issues. To better illustrate how syndromes are constructed, we have included the contents of the injury syndrome.

Injury Syndrome Composition		
BiteOrSting	CutOrPierce	DrowningOrSubmersion
Electrocution	ExcessiveHeat	Fall
FireBurnExplosives	MotorVehicle	Occupational
Overexertion	Poisoning	StruckBy
ToolsOrMachinery	Firearm	NonMotorVehicle
Suffocation	Assault	ForeignBody
SuicideOrSelfInflicted	Watercraft	SportsOrExerciseRelated

Weighting Chief Complaint Terms

ESSENCE weights chief complaint terms by assigning positive or negative values to specific words (or word combinations) which may appear in the chief complaint text. If the values associated with the terms appearing in a record's chief complaint add up to 6, the record will be considered a match and appear in your query output. The chief complaint weighting for the ChestCongestion and DifficultySpeaking subsyndromes are below.

For the ChestCongestion query, a record containing chest (2) + congested (4) would be considered a match, but not if it also included nasal (-2). Similarly, chest (2) + infection (4) would be considered a match, but not if nose (-2) was also included.

Chest (2)	Congested (4)	Congestion (4)
Head (-2)	Infection (4)	Nasal (-2)
Nose (-2)	Urinary Tract Infection (-4)	

For DifficultySpeaking, dysarthria (10) will always be counted as a match, as would speech (4) + disturbance (2). However, just trouble (2) or talking (4) appearing in the record (e.g., if the patient was "talking about his fall" or had "trouble walking") would not appear in your query output.

Cannot (2)	Cant (2)	Difficult (2)
Difficulty (2)	Disturbance (2)	Disturbed (2)
Dysarthria (10)	Hard (2)	Speak (4)
Speaking (4)	Speech (4)	Talk (4)
Talking (4)	Trouble (2)	Unable (2)

Query Composition

Composing a Custom Query

You can also search for specific patient encounters by creating custom queries for specific terms or diagnoses. Several clinically relevant fields support free-text queries, including chief complaint, triage notes, clinical impression, diagnoses, and CCDD (a combination of the chief complaint and discharge diagnosis fields). More information about the various fields and times when you might use them is available here.

Expert User Tip

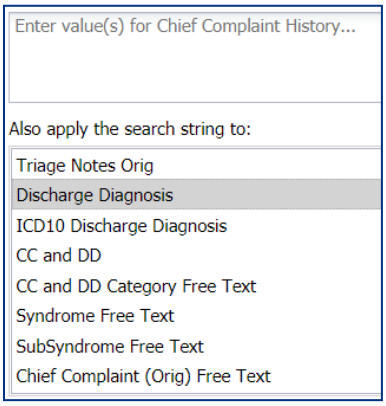
Because some facilities do not include the decimal point in their diagnosis codes, *you must include them both ways in your query*.

To compose a custom query, you may use wildcards (^) to search for text containing your term of interest, regardless of text that appears before or after. Boolean operators (e.g., and, or, andnot) may be used to combine and exclude terms. Parentheses can also be used to group search terms together. *You must separate wildcards, Boolean operators, and parentheses with commas. You must also open and close parenthetical expressions with commas*.

Topic	Query Syntax	Apply to Fields
Carbon Monoxide	(,^carb^,AND,^monox^,),OR,^T58^,OR,^T59.7^,OR,^T597^	Chief Complaint History, Discharge Diagnosis
Chlamydia	^A74.9^,OR,^A749^,OR,^A55^,OR,^A56.11^,OR,^A5611^,OR,^chlam^	Chief Complaint History, Discharge Diagnosis
Homelessness or Insufficient Housing	(^Z590^,OR,^Z59.0^,OR,^homeless^,OR,^no housing^,OR,^lack of housing^,OR,^without housing^,OR,^shelter^),ANDNOT,(,^animal shelter^,OR,^domestic violence shelter^,OR,^DV shelter^,OR,^dog^,OR,^cat^,)	Chief Complaint History, Discharge Diagnosis, Triage Notes Orig
Traumatic Amputation	(,^traum^,AND,^ampu^,),OR,^S08^,OR,^S28.[1-2]^,OR,^S28[1-2]^,OR,^S38.[2-3]^,OR,^S38[2-3]^,OR^S[4-9]8^	Chief Complaint History, Discharge Diagnosis

"Apply Search String To"

If you would like ESSENCE to apply your search string to multiple fields, you may use the "apply search string to" tool to accomplish that. Enter the syntax for your query in the box and then select the fields you would like to include. This will use an "or" operator to apply your syntax to the fields you have selected. Ordinarily, ESSENCE would apply your syntax across limiters (across the boxes in the right column) using an **and** operator, meaning that that your syntax would need to apply to *all* selected fields. The "apply search string to" feature provides with more flexibility to tailor your approach broadly across fields since information may be spread across several data elements. You can fine more information about data elements here.



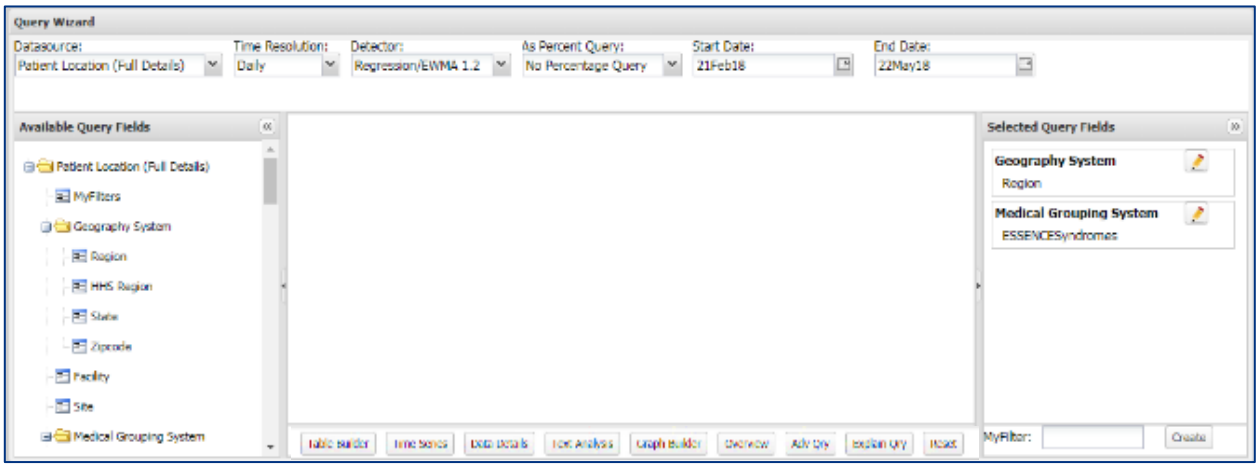
Please note that applying negations to multiple fields may result in some relevant records inadvertently being excluded. For help with negation terms, please see this tutorial from Wayne Loschen, MSc (JHU-APL).

Share What You Know!

If you create a novel query (or improve an existing one), please consider sharing it with others. You could request that it be indexed in ESSENCE to run faster, share it on one of our Community of Practice calls, or you could do both. The syndromic community *always* benefits from user contributions and *all contributions* (even questions!) have value for advancing the field.

Frequently Used Analysis Tools

Query Portal



Create a query to view information about specific visits:

Sample Table Builder Output

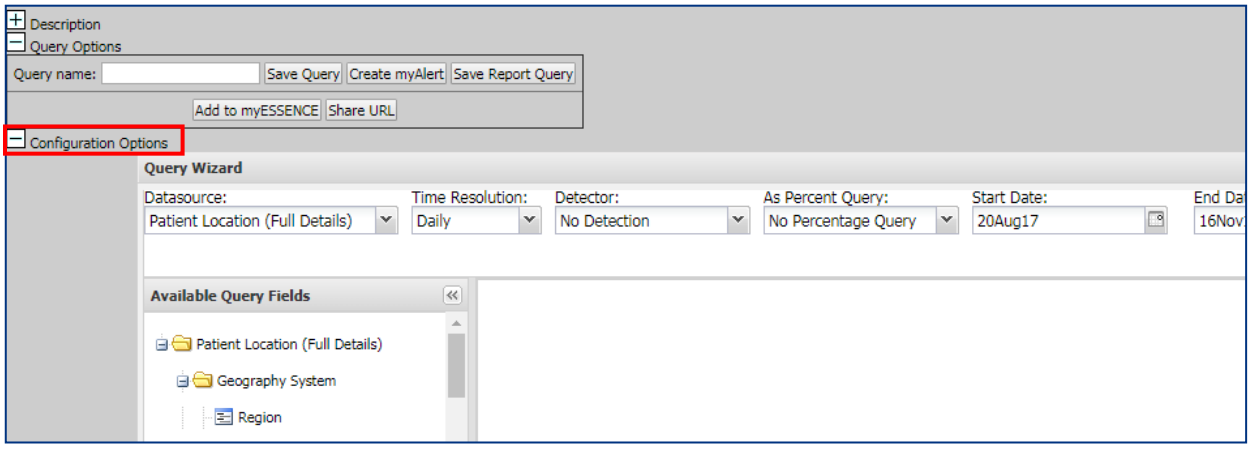
Ten Year Age Group (Show Totals)	Sex (Show Totals)		
	Female	Male	Unknown
00-09	184	229	0
10-19	184	203	1
20-29	300	331	0
30-39	222	311	0
40-49	197	266	0
50-59	222	270	0
60-69	180	208	0

1. Select your **Datasource** (see the section on data sources for more information). Note that you must choose your data source first. If you specify your other parameters and then try to select your data source, you will lose your work.
2. From the **Query Wizard** toolbar, select the **Time Resolution** for your query.
3. If desired, choose the numerator value for a **Percent Query** to view output as percentages. (More on creating percent queries.)
    - If you are unsure which fields are in your denominator, use the **Explain Qry** button at the bottom of the Query Wizard to display a visualization of your query.
    - More information about querying visit percentages is available here in the Common Tasks section.
4. Choose the **Start** and **End Dates** of interest for your query.
5. From the left-hand menu **Available Query Fields**, select the fields you would like to use to restrict your search (e.g., race, syndrome/subsyndrome, ZIP Code).
6. Verify that you have moved all the selections you desire into the **Selected Query Fields Menu.**
7. If you will reuse the parameters you have set, consider using the **MyFilter** feature to save them for next time.
8. If you would like to reset the Query Wizard, click the **Reset** button.
9. Once you are finished, select an output option.
    - Create a **table** of your query (see right) to view tabulations of visit data by various parameters.

- Create a **time series** of your query (see below) to view counts or percentages over time. More information about interacting with time series graphs is available here.
- View the visit-level **data details** of your query results, including chief complaint and demographic fields associated with each visit. More about using data details output is available here.
- Explore chief complaint **text analysis** with n-grams and text association webs. More information about text analysis tools is available here.
- Build graphs of your query results, including word clouds and calendar heat maps using **Graph Builder**.
- Build more complex queries using the **Adv Qry** tool.

Modifying a Query

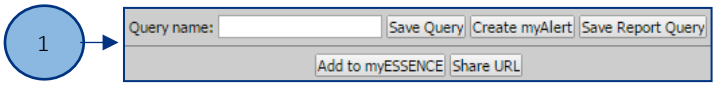
If you would like to change the limiters for your query after you have run it (regardless of your chosen output), open the **Configuration Options** dropdown above your query output. It will open a **Query Wizard** window identical to the one in the Query Portal. Make whichever changes you desire and then *reselect your output to run the query*.



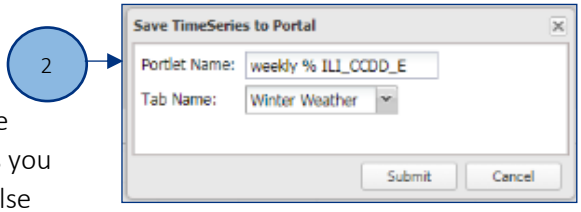
myESSENCE Dashboards

You can easily monitor multiple conditions (or subpopulations and other stratifications) by saving your queries in **myESSENCE** dashboards.

1. You may add queries to a **myESSENCE** dashboard from the **Time Series** viewer by adding a name to your query and clicking **Add to myESSENCE.** You can find the box in the **Query Options** drop down.

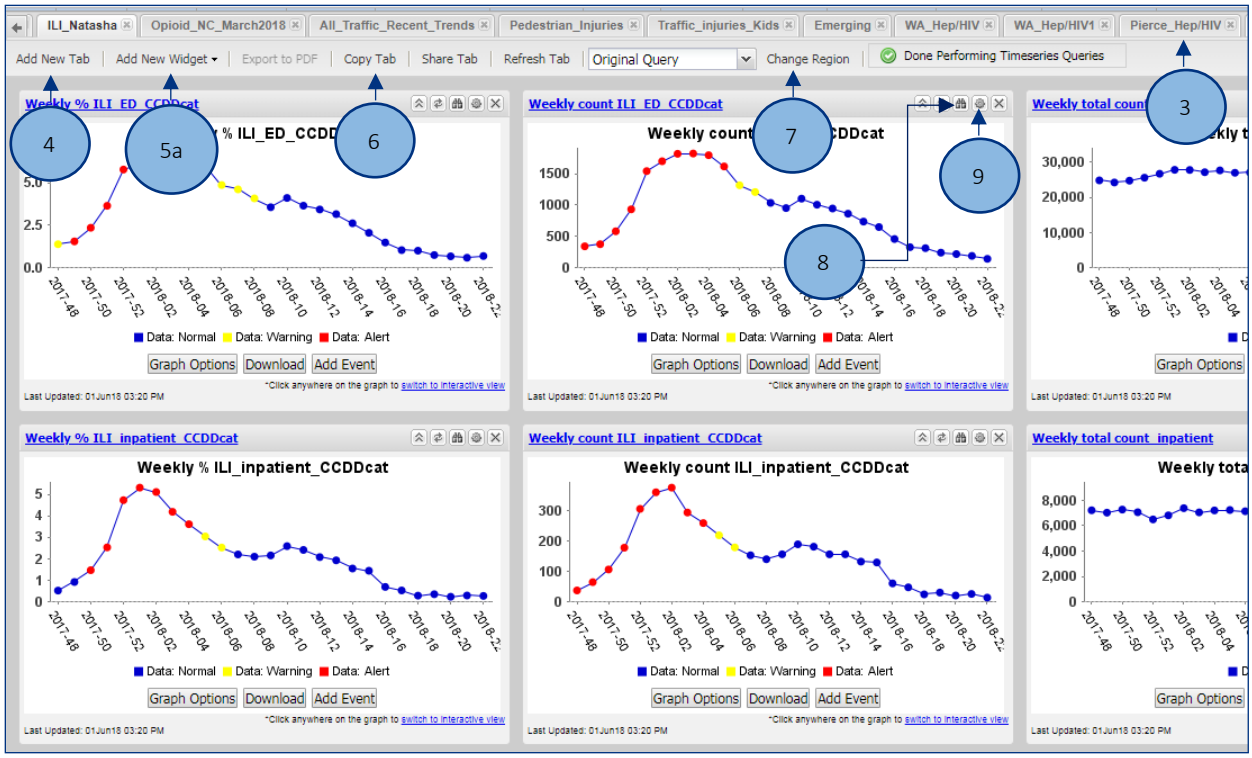


2. Confirm your query title and the correct tab, then click submit.
    - Consider choosing a strong naming convention for your queries. Many times, the only information you will have about queries you have made in ESSENCE (or which someone else

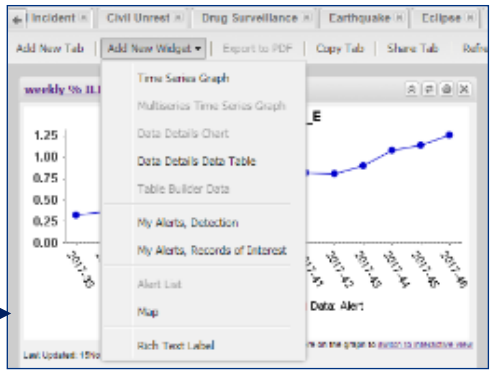


made and sent to you) is the title. Having a series of descriptors in the title (e.g., weekly % ILI_emergency_King County) can help you remember in 6 months what it was that you were trying to monitor.

3. View and organize saved queries using customizable tabs.
4. Add a **New Tab** to create a new dashboard.



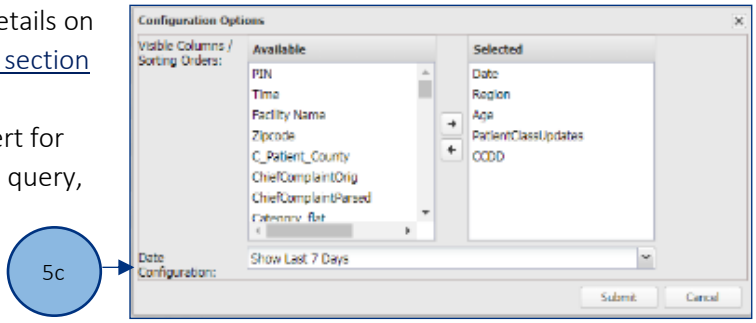
5. Add a **New Widget** to your dashboard choosing from a drop down list of items like **Time Series**, **Data Details**, **MyAlerts, Rich Text Labels,** and **Maps**. Figure 5b shows the drop down menu for adding widgets.



- Time series graphs and maps are staples of dashboards and allow you to quickly visualize trends in both time and geographic distribution of the condition(s) you are monitoring.
- You may find the text boxes helpful while organizing your dashboard so that either you or another user can easily scan the dashboard for relevant information using the context you provide there.
- Data details outputs can be customized with a variety of fields to view the record-level information for your visits of interest. The RHINO team has found these particularly helpful in topical dashboards for conditions like vaping-associated lung injuries, measles, and e-scooter injuries. Figure 5c is a sample configuration options window.
- If you would like to add a statistical alert for a saved query to your dashboard, select **My**

Alerts, Detection. For more details on myAlerts, please refer to that section of the guidebook.

- If you would like to add an alert for any records matching a saved query, select **My Alerts, Records of Interest.** For more details on myAlerts, please refer to that section of this handbook.



6. **Share** your **myESSENCE** dashboard tab with another ESSENCE user.
7. Modify the geographic (regional) parameter for your queries.
8. Click the binocular button above widgets to view the parameters of the query.
9. Click the gear to modify the parameters of a widget's query.
10. Once you have opened the configuration options box, select the data elements you would like and click **submit**.

myESSENCE Dashboard Manager

When you open myESSENCE from the taskbar ribbon, ESSENCE will open an overview page with all of the dashboards, which either you have built or which have been shared with you. Using the **myESSENCE Overview** tab, you can manage your dashboards, share them, or archive them for later use.

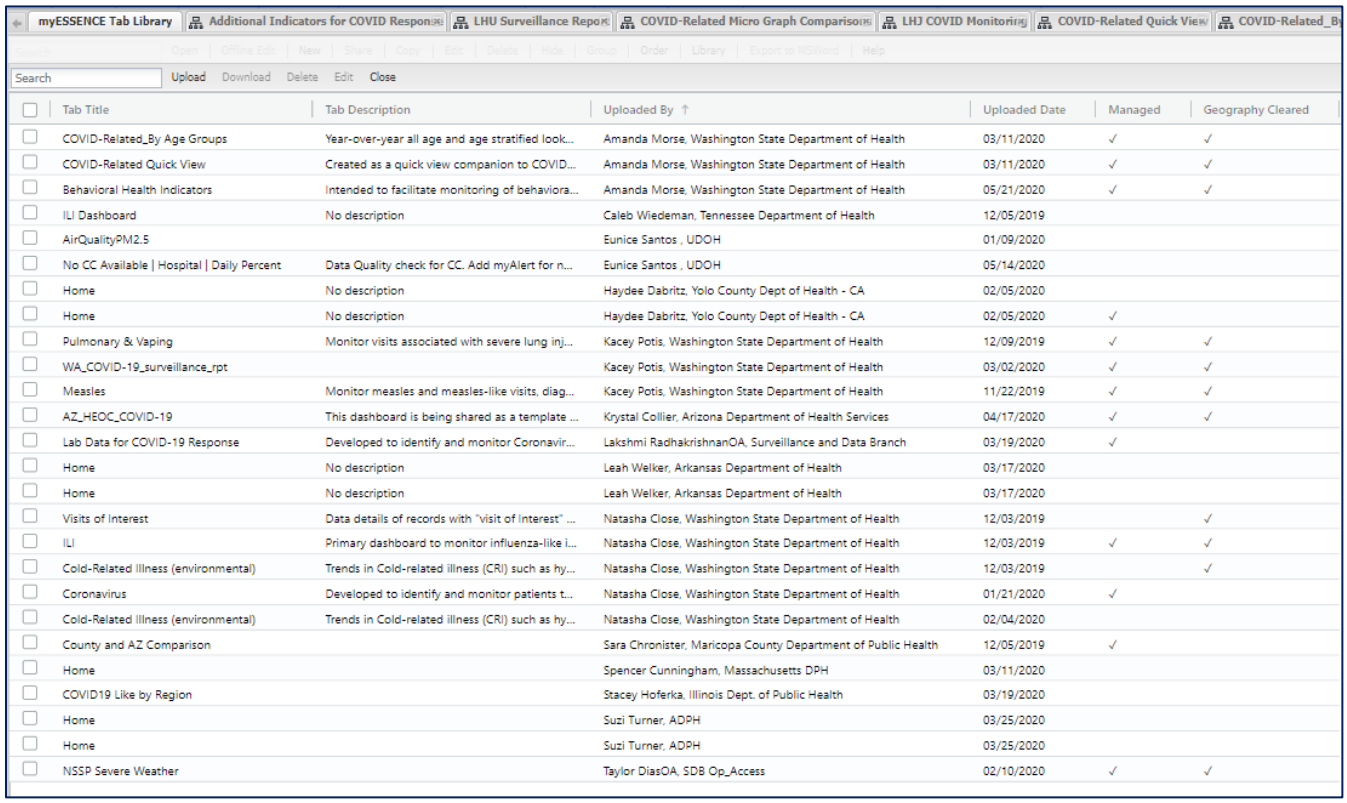
11. View the titles of your dashboards.
12. Description of dashboard contents or purpose.
13. Organize your dashboards by reordering them.
14. Open the myESSENCE Dashboard Library where you can view and download dashboards built and shared by other NSSP ESSENCE users around the country.
15. Export your selected dashboard as a MS Word Document.
16. View the number of people with whom the dashboard has been shared and whether it is a **managed tab**, which will automatically update as the original creator updates their version of the dashboard.
17. Individual who shared the dashboard with you (if you did not create it).
18. Individual who manages the tab, if it was shared with you as a managed tab.

19. View whether you have archived the dashboard.

Dashboard Library

To make sharing dashboards easier, NSSP and JHU-APL created the myESSENCE Dashboard Library. From the overview page, click the **Library button** in the myESSENCE Overview menu bar.

To download a dashboard, simply tick the box next to the title and then click **download**. When you return to your myESSENCE Dashboard Overview page, the new dashboard will be loaded and ready to use.

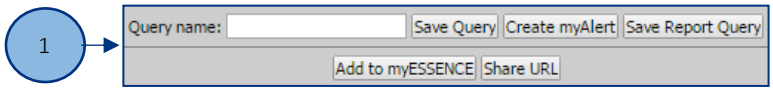


Tab Title	Tab Description	Uploaded By	Uploaded Date	Managed	Geography Cleared
COVID-Related_By Age Groups	Year-over-year all age and age stratified look...	Amanda Morse, Washington State Department of Health	03/11/2020	✓	✓
COVID-Related Quick View	Created as a quick view companion to COVID...	Amanda Morse, Washington State Department of Health	03/11/2020	✓	✓
Behavioral Health Indicators	Intended to facilitate monitoring of behaviora...	Amanda Morse, Washington State Department of Health	05/21/2020	✓	✓
ILI Dashboard	No description	Caleb Wiedeman, Tennessee Department of Health	12/05/2019		
AirQualityPM2.5		Eunice Santos , UDOH	01/09/2020		
No CC Available | Hospital | Daily Percent	Data Quality check for CC. Add myAlert for n...	Eunice Santos , UDOH	05/14/2020		
Home	No description	Haydee Dabritz, Yolo County Dept of Health - CA	02/05/2020		
Home	No description	Haydee Dabritz, Yolo County Dept of Health - CA	02/05/2020	✓	
Pulmonary & Vaping	Monitor visits associated with severe lung inj...	Kacey Potis, Washington State Department of Health	12/09/2019	✓	✓
WA_COVID-19_surveillance_rpt		Kacey Potis, Washington State Department of Health	03/02/2020	✓	✓
Measles	Monitor measles and measles-like visits, diag...	Kacey Potis, Washington State Department of Health	11/22/2019	✓	✓
AZ_HEOC_COVID-19	This dashboard is being shared as a template ...	Krystal Collier, Arizona Department of Health Services	04/17/2020	✓	✓
Lab Data for COVID-19 Response	Developed to identify and monitor Coronavir...	Lakshmi RadhakrishnanOA, Surveillance and Data Branch	03/19/2020	✓	
Home	No description	Leah Welker, Arkansas Department of Health	03/17/2020		
Home	No description	Leah Welker, Arkansas Department of Health	03/17/2020		
Visits of Interest	Data details of records with "visit of Interest" ...	Natasha Close, Washington State Department of Health	12/03/2019		✓
ILI	Primary dashboard to monitor influenza-like i...	Natasha Close, Washington State Department of Health	12/03/2019	✓	✓
Cold-Related Illness (environmental)	Trends in Cold-related illness (CRI) such as hy...	Natasha Close, Washington State Department of Health	12/03/2019		✓
Coronavirus	Developed to identify and monitor patients t...	Natasha Close, Washington State Department of Health	01/21/2020	✓	
Cold-Related Illness (environmental)	Trends in Cold-related illness (CRI) such as hy...	Natasha Close, Washington State Department of Health	02/04/2020		
County and AZ Comparison		Sara Chronister, Maricopa County Department of Public Health	12/05/2019	✓	
Home		Spencer Cunningham, Massachusetts DPH	03/11/2020		
COVID19 Like by Region		Stacey Hoferka, Illinois Dept. of Public Health	03/19/2020		
Home		Suzi Turner, ADPH	03/25/2020		
Home		Suzi Turner, ADPH	03/25/2020		
NSSP Severe Weather		Taylor DiasOA, SDB Op_Access	02/10/2020	✓	✓

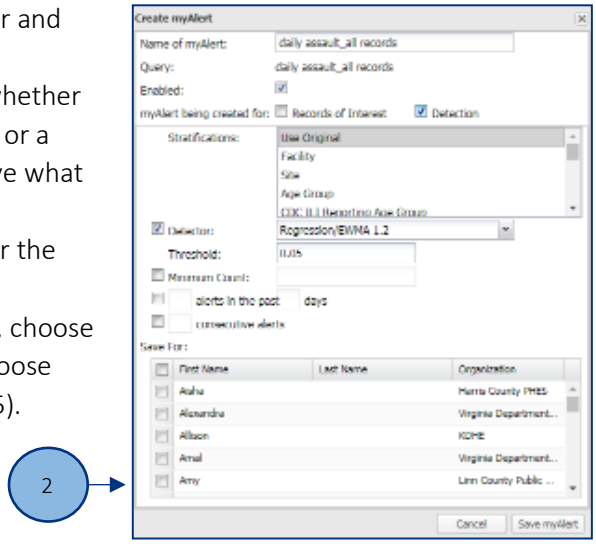
myAlerts

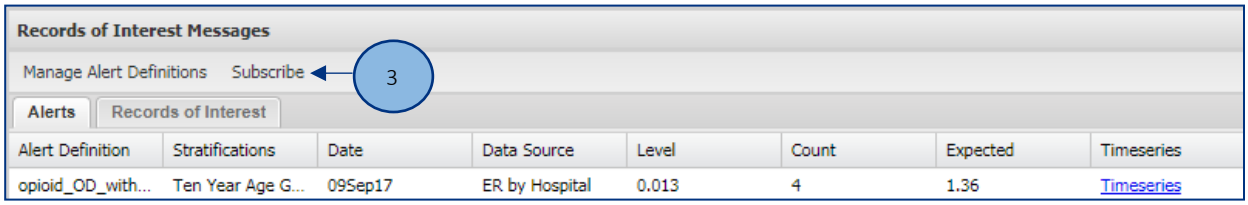
Create alerts for saved queries and receive emails from ESSENCE when records of interest or higher than expected visit counts are detected.

1. You can create alerts for queries from the **Time Series** viewer by adding a name to your query and clicking **Create myAlert.**
   - Consider choosing a strong naming convention for your queries. Many times, the only information you will have about queries you have made in ESSENCE (or which someone else made and sent to you) is the title. Having a series of descriptors in the title (e.g., weekly % ILI_emergency_King County) can help you remember in 6 months what it was that you were trying to monitor.

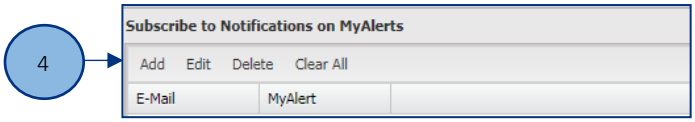


2. Once you click **Create myAlert**, a window will appear and you can set your alert parameters.
   - Confirm your query title and then choose whether you would like alerts for **records of interest** or a specific **detection** threshold (i.e., visits above what would be expected).
   - Choose any **stratifications** you would like for the records in your alert.
   - If you would like alerts for a detection level, choose your model (or leave as the default) and choose your threshold (or leave as the default, 0.05). Alternatively, you may choose alerts for exceeding a minimum count of records, a specific number of alerts over a defined period of days, or a defined number of consecutive statistical alerts.
   - If desired, you may share your alert with any other NSSP ESSENCE user in the system.

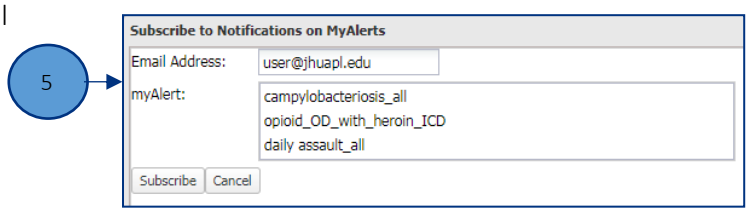




3. In your **myAlerts** page, view your alerts for **detection** levels or **records of interest**. To receive email alerts for your alerts, click the **subscribe** button in the toolbar.
4. In the popup window, you can view, **edit**, or **delete** your current subscriptions. To add a new alert subscription, click **add.**



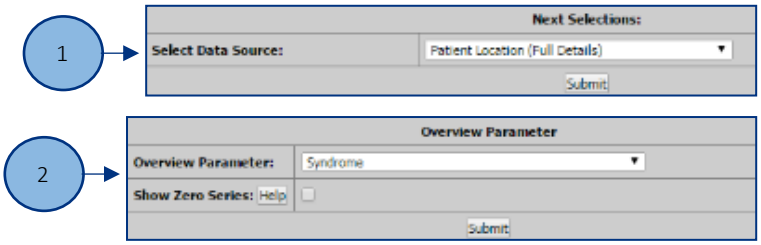
5. In the popup window, enter your email address and then select the alert(s) to which you would like to subscribe to automated emails of alert notifications.



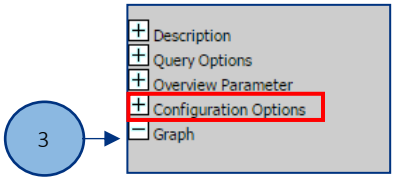
Overview Portal

If you would like to quickly monitor all syndromes or facility visit total counts in your jurisdiction's data outside of myESSENCE dashboards, you may use the **Overview Portal**.

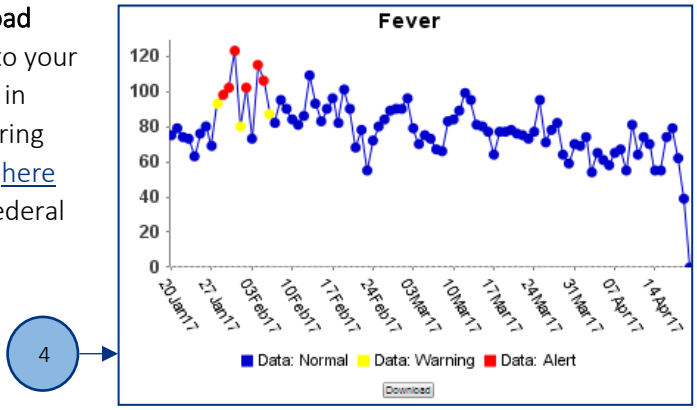
1. After opening the portal, select your desired **data source** (more on data sources here).
2. Select an **overview parameter.**
3. Open the **Configurations Options** window in the upper left corner and select query limiters as you would in **Query Portal** (more here).



4. If you identify a condition you would like to investigate more closely, you can easily do so.
    - If a time series contains a data point you would like to investigate, you may click on it to view the line-level data details. It is helpful to use a right click and open in a new tab so that you can return to the Overview.
    - If desired, you may use the **download** button below any graph to save it to your device. Graphics may be published in compliance with RHINO's Data Sharing Agreement (publication guidelines here and here) and relevant state and federal laws.

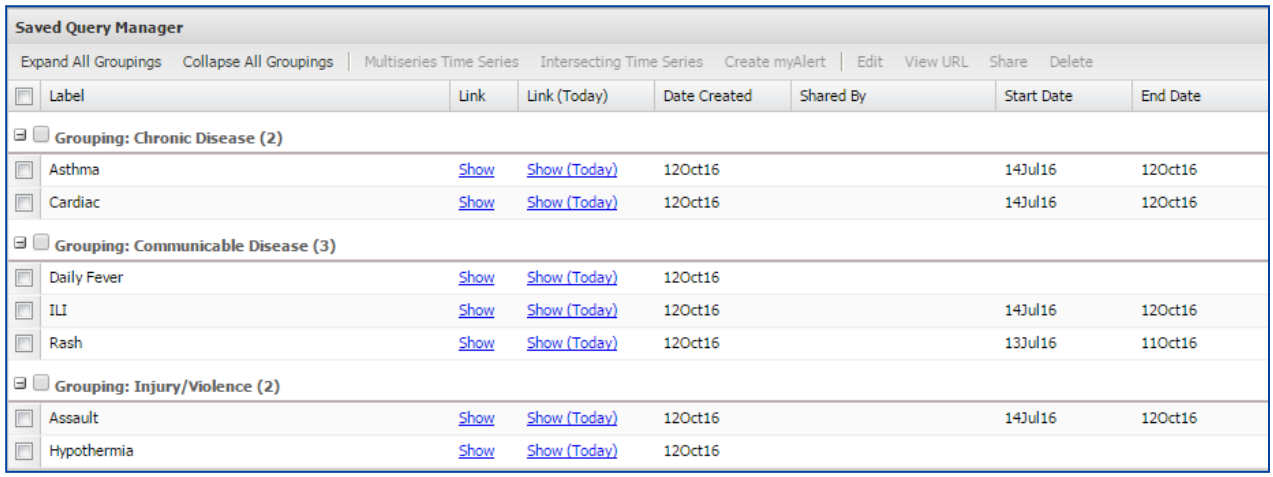


If you decide to modify your configuration options, you will need to click **overview** and repeat steps 1 and 2.



Query Manager

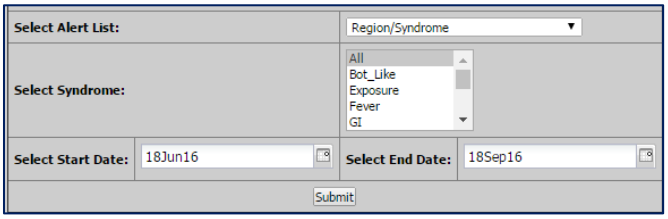
Manage your saved queries in the **Query Manager:**



- Create a **Multi Series Time Series** (i.e., an overlay) of two or more saved queries.
- Create an **Intersecting Time Series** of two or more saved queries.
- Create a **myAlert** to monitor your saved query (more here).
- **Edit** the category of your saved query or add notes to it.
- Use **View URL** to view the parameters of your query without running it.
- **Share** your saved query with another user.
- **Delete** your saved query.
- Select a **Link** option to run the query using the original date parameters.
- Select a **Link (Today)** option to run the saved query for the last 90 days.
- Verify the **Start** and **End** dates of the original saved query.

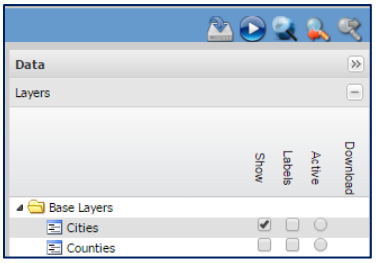
Map Portal

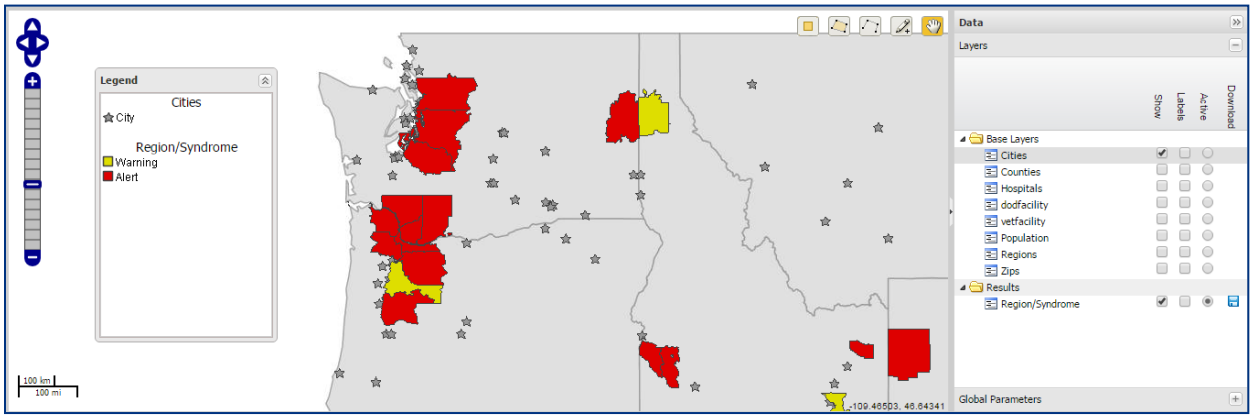
Create visualizations of alerts in your region, either for a specific syndrome or for all alerts, over a specified time period.



1. Select an option from the ESSENCE Alert List (e.g., Region/Syndrome, Hospital/Syndrome, Spatial) to configure your map.
2. Select the syndrome(s) you wish to map.
3. Select the time range for your map.
4. Once you have created your map, you can add layers to label your map.
5. Add base layers to your map by clicking the **show** box for each desired layer. Click **show** and **labels** to include base layer labels.

- Scale your image with the bar on the left side of the map window.
- Alert colors are shown in yellow or red. Yellow indicates a p-value between 0.05 and 0.01. Red indicates a p-value less than or equal to 0.01.
- Select certain features of your map using these tools.
- To download your map, click the hard drive icon above the Base Layers menu.



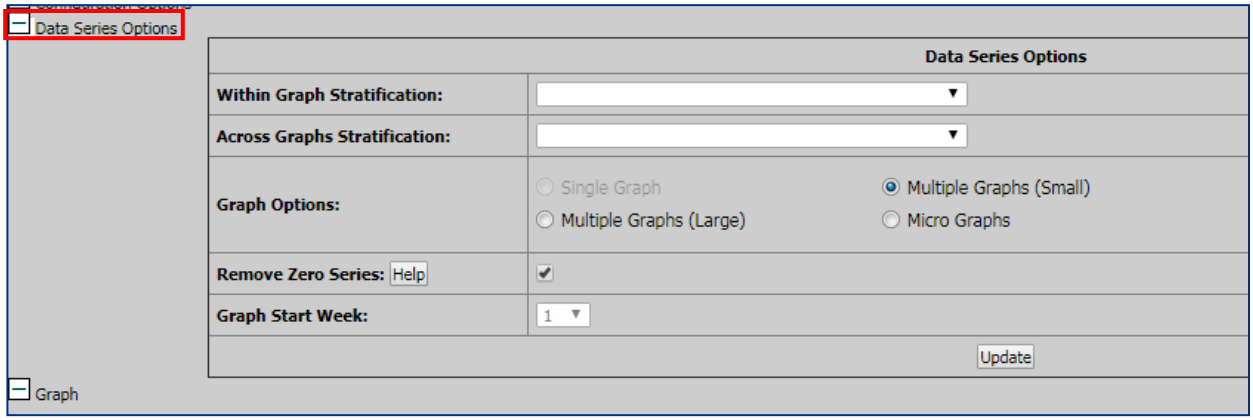


Common Tasks in NSSP ESSENCE

Interacting with a Time Series Graph

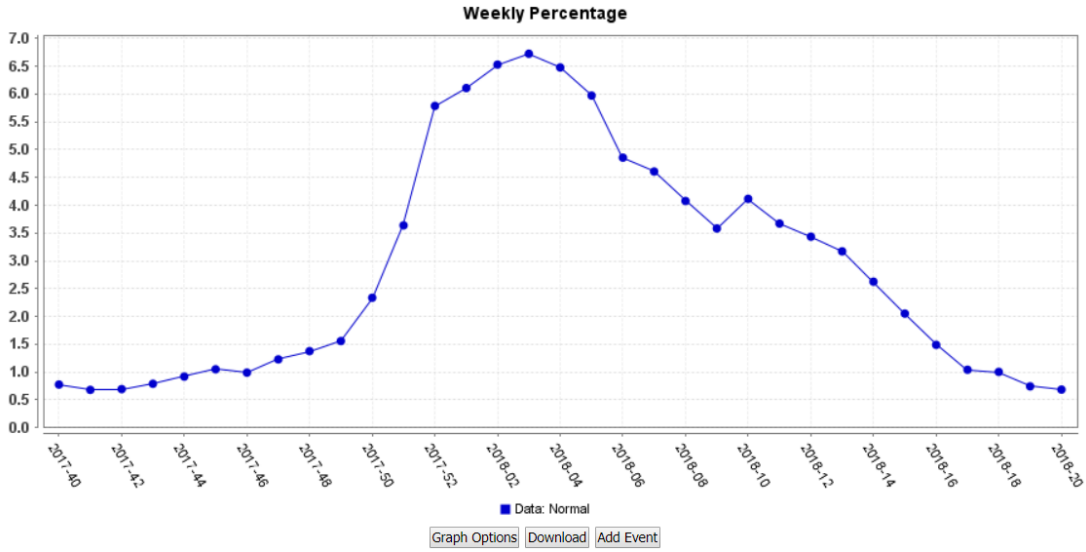
Stratifying Your Time Series

- If you would like to stratify your time series, you may do so in the **Data Series Options** dropdown.
- Use the **Within Graph Stratification** dropdown options to stratify within a single graph.
- Use the **Across Graph Stratification** dropdown options to stratify across several graphs.
- Choose the display option for your time series graph(s).
- If stratifying **within graph** by **year,** select your query starting point.
- When your query stratification selections are complete, click **Update.**



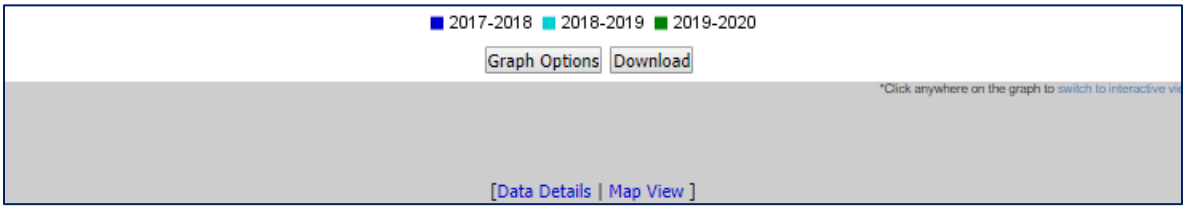
Modifying Your Time Series Display

- Edit the title and axis notations for your graph in the **Graph Options** tool. ESSENCE does not allow all characters and will not update your graph title and axes if you have included unsupported characters (e.g., hyphens).
- If desired, you may use the **download** button below any graph to save it to your device. Graphics may be published in compliance with RHINO's Data Sharing Agreement (publication guidelines are available here and here) and relevant state and federal laws.
- Use the **Add Event** feature to add either a line or shading to designate an event (e.g., showing respiratory illness season when showing influenza-like illness graphs. You are also able to notate thresholds using this option.
- Instead of stratifying your time series, you may also create an overlay from the same or another data source. The **Add** Overlay button will open a **Query Wizard popup.** This is particularly helpful for comparing clinical records and weather events. For more information about other non-clinical data sources in NSSP ESSENCE, see the data sources section of this guidebook.
- Use the **Intersecting Time Series button** to open the query wizard and create an intersecting time series with a second query.



Viewing a Map of Visits from a Time Series

If you would like to view a map of the data contained in your time series graph, you can easily create one using the **Map View** button below the graph.



Using Text Analysis Tools

Using N-Grams

ESSENCE has several n-gram options available for you to explore the relationships between chief complaint terms.

- **Top 50 unigram frequencies – chief complaint parsed** will show the 50 most common single terms in the chief complaint text of your query results, (e.g., assault, sexual, alleged).
- **Top 50 bigram frequencies – chief complaint parsed** will show the 50 most common combinations of two terms in the chief complaint text of your query results (e.g., sexual assault, alleged assault, suicide attempt).
- **Top 50 unigram frequencies – discharge diagnosis codes** will show the 50 most common single diagnostic codes in your query results (e.g., T74.21XA, T76.21XA).
- **Top 50 bigram frequencies – discharge diagnosis codes** will show the 50 most common combinations of two diagnostic codes in your query results (e.g., T74.21XA, Z23).

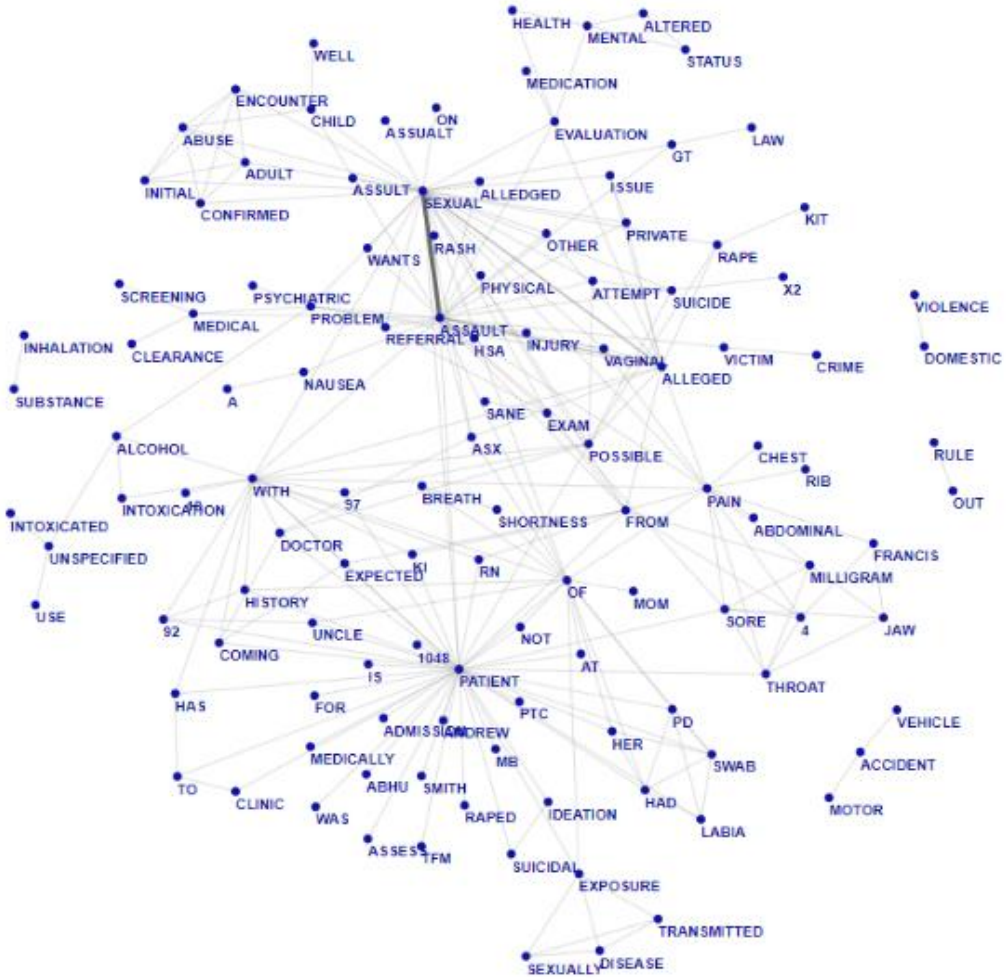
Chief Complaint

To better understand the relationships between common chief complaint terms, you can use the **top 250 term associations – chief complaint parsed** feature in the text analysis output. This feature will

show associations between the 250 most common chief complaint single terms, allowing you to better look for associations, which might not be visible otherwise.

- Hovering over an individual term with your mouse will show the associations for that single term.
- You can hold a term and drag it to another area to better organize the term web.

Sample Term Association Web for Chief Complaint Text Parsing



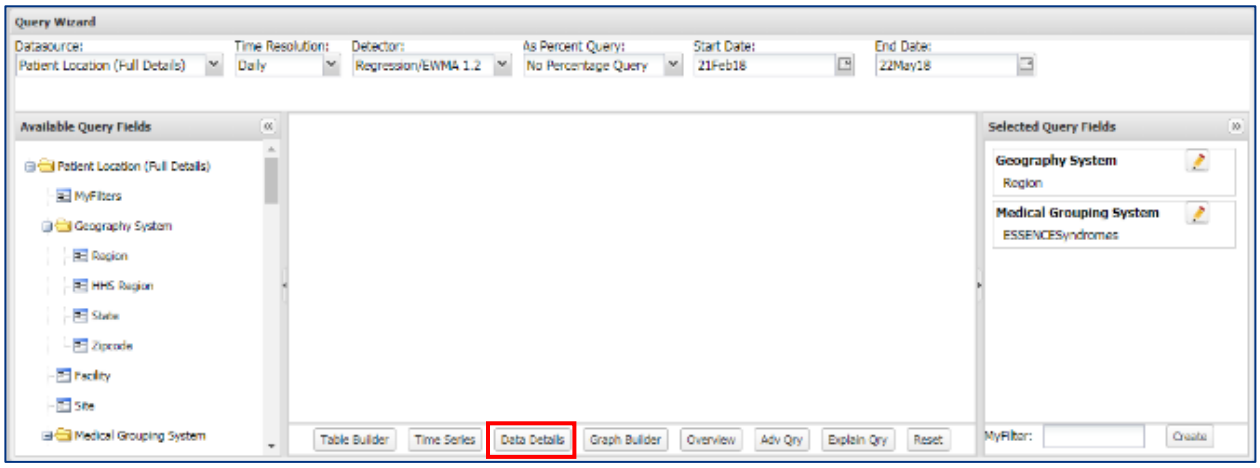
Viewing the Record-Level Details for Visits

Part of conducting surveillance for your work situation may mean viewing the record-level (also called visit-level) details for relevant visits. There are several ways to pull down these details. While some are detailed briefly in other areas of the guidebook, this section will detail them more fully.

If you are unsure what level of detail you are able to view in RHINO data, please refer to the data release framework or contact RHINO to ask what you are able to view.

Opening Data Details Output Directly

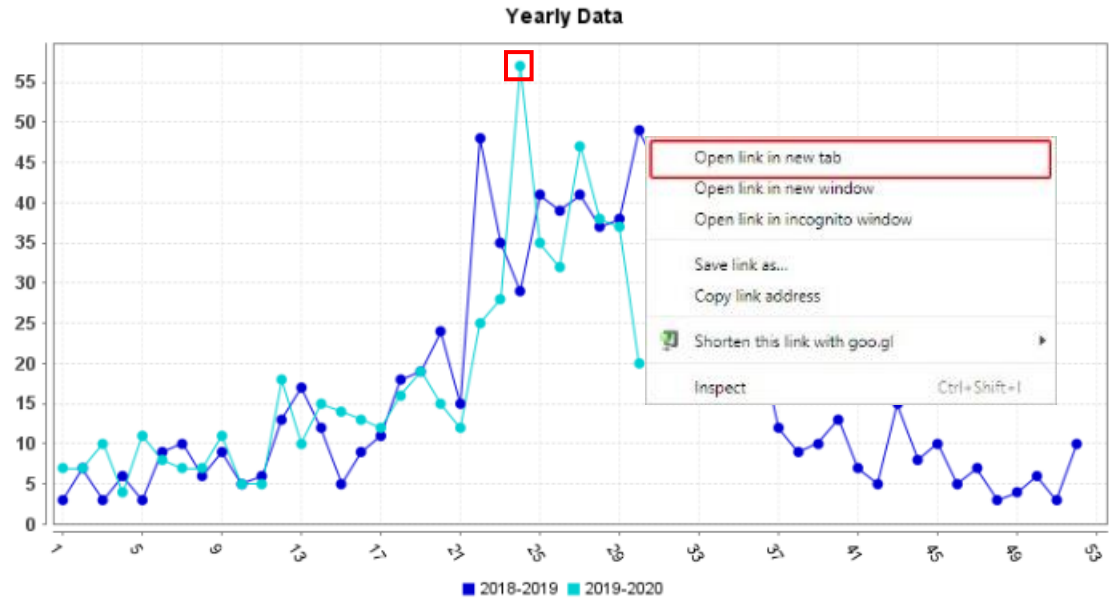
From the Query Portal, you can choose **data details** as your output. Rather than opening a time series graph or building a table, ESSENCE will display the record-level details for visits, which meet your query parameters.



Opening Data Details Output for a Single Point on a Time Series Graph

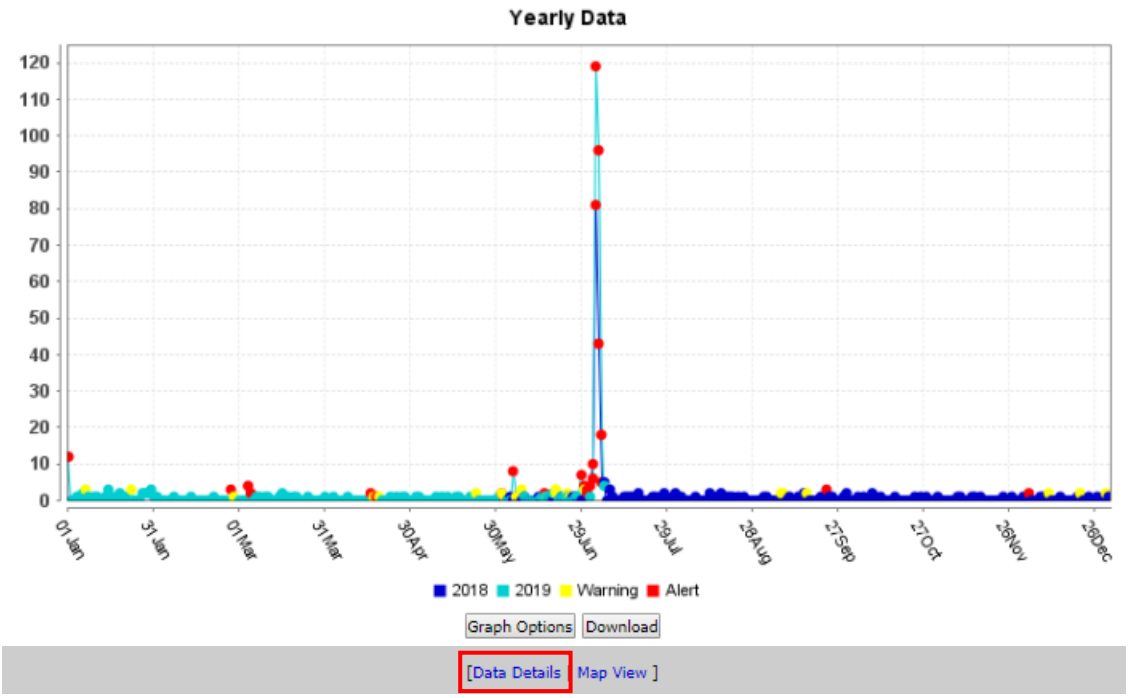
When viewing a time series graph, you can also open the data details for the visits associated with a single time point on a time series graph. This can be done from a standard time series graph or from a time of day graph. If you are viewing a time series graph and would like to investigate the visits associated with a data point, you can do that by clicking directly on that data point.

Because ESSENCE does not always respond well to the back button in browser windows, we recommend right clicking on the data point and then opening it in a new tab. Note that you may need to click on the graph once to "switch to interactive view" before opening the data point.



Viewing Data Details for All Visits from a Time Series

If you are viewing a time series display and would like to view the record-level details for all of its associated visits, you can do so using the **Data Details** hyperlink below your time series graph.

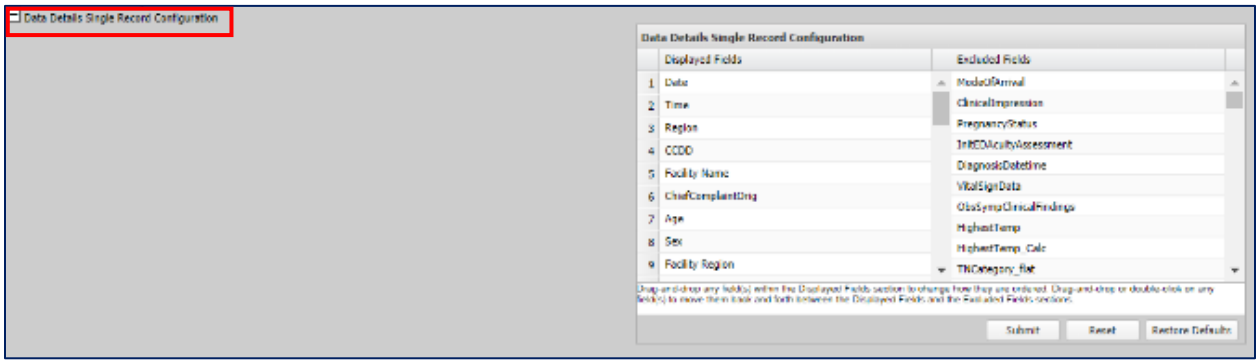


Organizing the Data Details Output

If you find that the default organization of the data details output does not suit your needs, you can easily reorder the columns of the output using the **data details table configuration** dropdown. To reorder fields, click and hold them to drag. To exclude fields, double click them or drag them over to the excluded fields column.

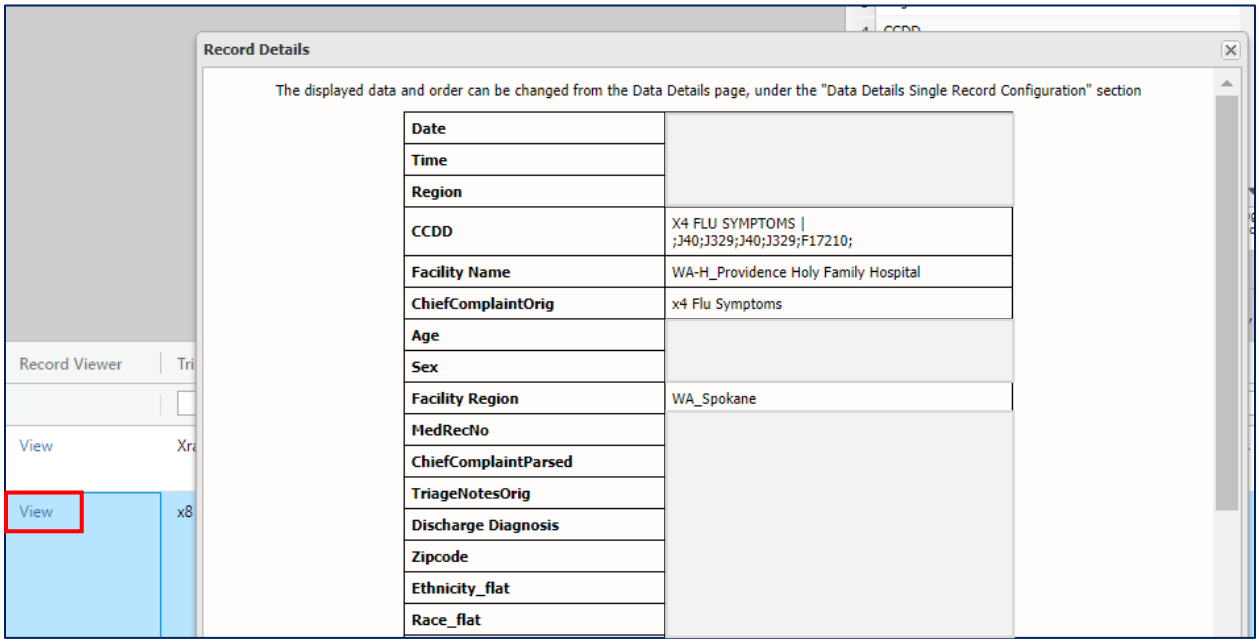
Viewing a Vertical Data Details Display for Individual Visit Records

If you would like to view an individual visit's details in a vertical format (i.e., with text wrapping), you can configure your display format using the **data details single record configuration** dropdown option and select your fields of interest. Please note, in order to view any fields in the single record display, you must



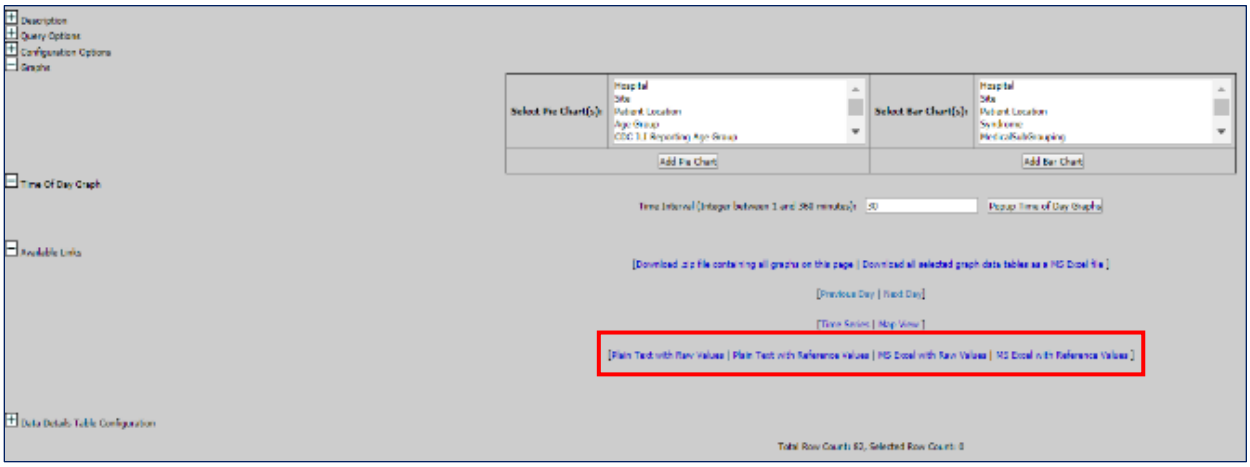
select them.

Once you have established your configuration options, you can click the **view** button in the first column of the data details table to view a vertical output of the record-level details for that visit.



Please note that in the display shown, several data elements have been masked to protect patient privacy.

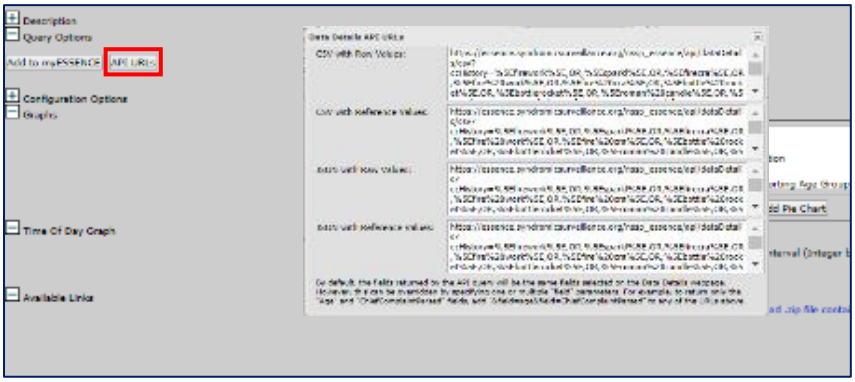
Exporting Record-Level Details for Smaller Visit Volumes



If you would like to download the record-level details for further analysis, it's easy to export the data from ESSENCE. ESSENCE will allow you to download the data as a plain text file with raw values, a plain text file with reference values, an Excel sheet with raw values, or an Excel sheet with reference values. Raw and reference values refer to the format in which the data is transmitted to RHINO (raw values) and how it is transformed when it flows into ESSENCE (reference values). An example of raw and reference values is patient administrative sex being transmitted as male, m, female, and f, then being transformed to the standard values of male and female.

For data security standards, please refer to our data sharing agreement. RHINO data exported from ESSENCE or any other interface must be stored on a secure drive and handled in conformance with the standards in the data sharing agreement.

Using APIs to Pull Large Volumes of Visits



Because pulling the record-level details for large volumes of visits can stress the servers which feed into ESSENCE, it is good practice to only use the above methods for smaller (≤5,000 visits) datasets. For larger volumes of data, you can use an Application Programming Interface (API) to pull the visits into another analysis tool like R or Stata.

Begin by opening up the data details output for your visits of interest. Above and to the left of the data details table, open the **Query Options** drop down and click the **API URLs** button. This will open a popup with several link options to pull down the records. You can use these links to pull large volumes of data into other analysis platforms.

RHINO, NSSP, and JHU all recommend that you initially run your API for a short window of time—no more than a few days. Once you have created it, you can change the URL calls for the start and end points to

reflect the timeframe you need for your project. If you are pulling the data repeatedly, RHINO has R code to modify these dates at the top of your code to speed this process.

- endDate=11Jan2021
- &startDate=9Jan2021

More information about using APIs to pull data into R is available in that section of this guidebook.

Using APIs to Extract Data from ESSENCE into R

Overview of APIs

Application Programming Interfaces (APIs), at their most basic level, are a method for computers to talk to each other. It allows one system to make a "call" to another to provide certain data parameters, which are defined in the API's unique URL.

APIs have a number of advantages for informatics and surveillance work, including

- Allowing you to pull data out of ESSENCE and into another platform (like R) where you can complete more sophisticated analyses,
- Creating visualizations more attractive than what is available in ESSENCE,
- Incorporating ESSENCE data into a report,
- Conducting repeated tasks, such as pulling data or graphics for reports and analyses

Creating Your API in ESSENCE

ESSENCE allows for the creation of APIs from most data outputs. To access the API for a dataset or visualization, you should first build your query in the normal way. From there, you should open the **Query Options** drop down and click the **API URLs** button. This will open a popup with several link options for APIs.

- For a time series graph, you will have the option to choose a .PNG file or a .csv of the data from which the graph is compiled.
- For the table builder output, you can choose a .csv or a .json file. You do not need to actually load the table to access the API, just to set the column and row values.
- If you are pulling record-level details from the data details output, more information is available here.

Some Key Considerations

If you are pulling large volumes of data (e.g., many, many records from the data details output or a table with many stratifications), there are some key considerations you should take into account while you work.

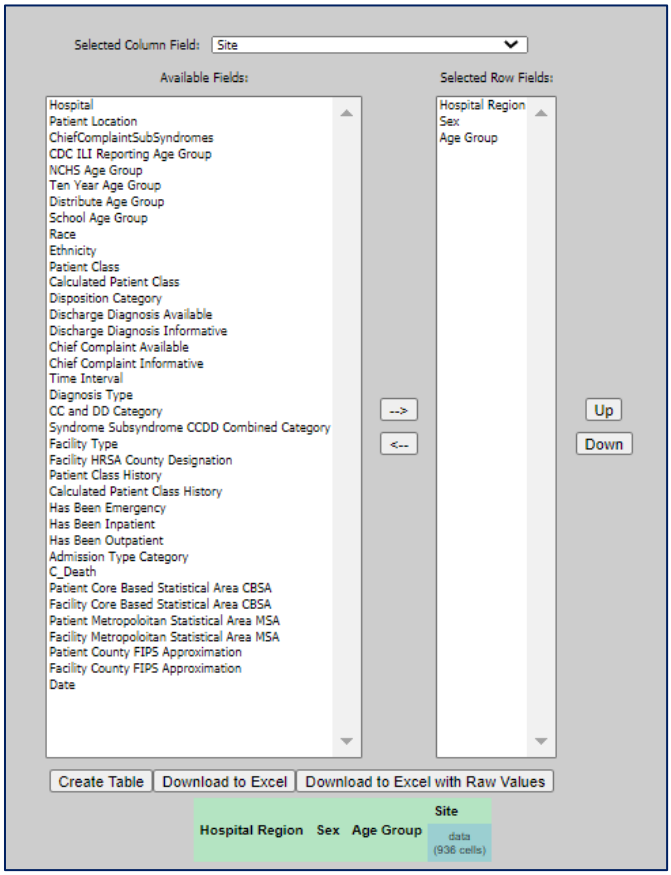
1. First, evaluate if you really need all the raw data. Can it be aggregated?
    - If so, consider pulling the data in smaller timeframe chunks.
2. Consider which fields you need (this might help with aggregation!)
3. Repeated data pulls:
    - Save a "historical" data file and only pull more recent data and append

    - Pull only records that have been updated recently using “LastUpdatedDateTime”
4. Run large data pulls after hours or on the weekend
5. Turn off VPN and any other devices using up internet

Pulling Tidy Tables

You may find that, as you build increasingly complex tables in ESSENCE, they become unwieldy when you export them. If this is the case, RHINO has some tips to improve their ease of use:

- When you build your query, try setting Site = Washington. This will allow you to set a single value (Site) as your **column value** and all stratifications of interest as **row values**
    - HasBeenE can also do this if you’re pulling emergency department visits
- If you use a percent query, your output will include columns for:
    - Numerator (relevant counts)
    - Denominator (total counts), and
    - Percentage (relevant counts/total counts)
- You only need to design the table in ESSENCE to generate the API URL
    - If there are too many cells in table builder, you can still pull the data via API
- If you stratify by facility or region, you will get ALL options in the system
    - Explicitly select facilities or regions of interest when you build your query to avoid this unfortunate outcome.

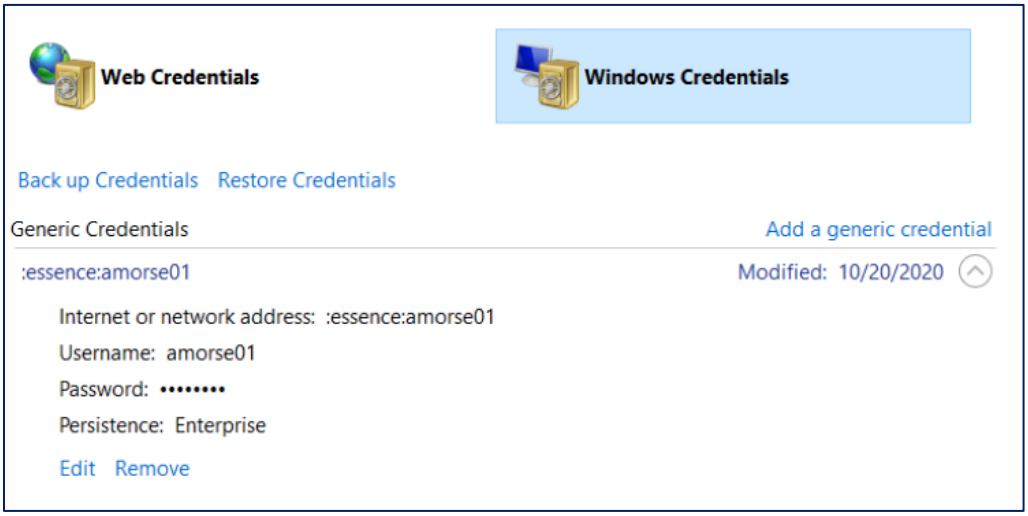


Setting Your ESSENCE Credentials in Windows Credential Manager

Because RHINO data needs to be accessed securely, it is necessary that R be able to authenticate your identity using your ESSENCE credentials when you are using an API to pull data. There are two primary ways to do this, the easiest being the package “keyring” in R. Rather than storing your username and password in your code, keyring will mask your password, which is important if you share code with others. There are two ways to use keyring:

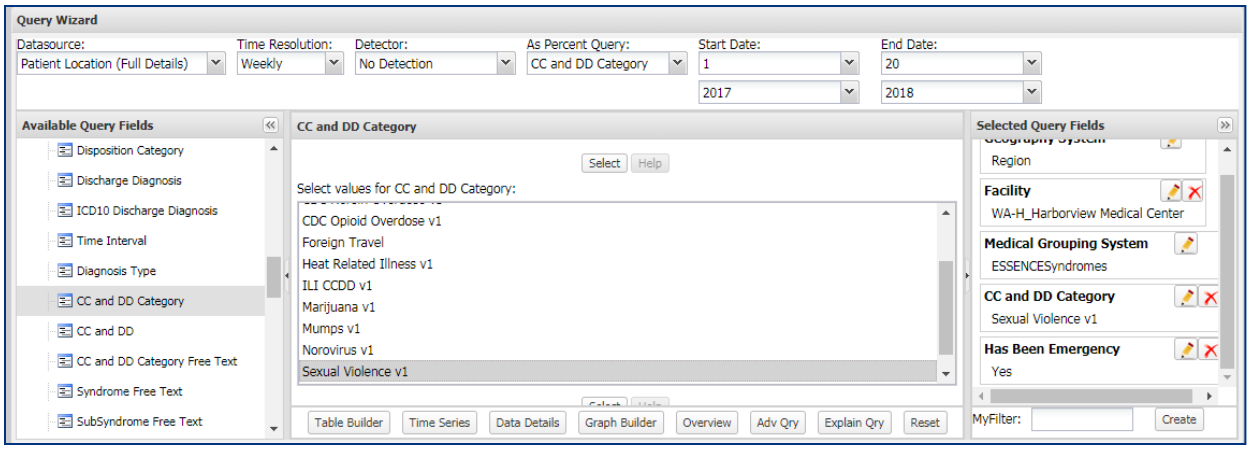
- Option 1: manually enter password into pop-up
    - You have to enter your password every time you run the script, but it stores the password for all APIs you run during that pass over the data.
    - It stores your username in the code, meaning that anyone else who runs it would need to modify the script before they run it.

- Option 2: save credentials in Windows Credential Manager
    - You won't need to enter your password every time you run your script (which can be annoying).
    - Many people can run the shared code without needing to modify the script (which can also be annoying).
    - You will need to change your password in the credential manager every 90 days when you update it in ESSENCE.



Creating a Percent Query

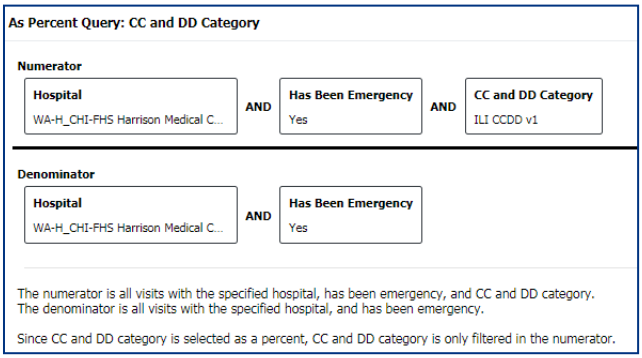
Create a **percent query** to analyze the percentage of visits meeting the parameters of your query.



- From the **Query Wizard toolbar**, select the **data source** of interest.
- Select the **Time Resolution** for your query.
- Identify the parameter that forms your denominator:
    a. Syndrome
    b. A demographic variable (e.g. age)
    c. "CC and DD" (if you are creating a free text query).

- Choose the **Start** and **End Dates** of interest for your query.
- Choose the parameters for your query in the **Available Query Fields** menu.
- Verify that all of your selections are listed in the **Selected Query Fields Menu.**
    a. Be mindful to include the parameter you chose for the percent query. For example, if you want to see the percentage of visits among females, the query should be limited to Sex = Female and percentage query parameter should be sex.
- Create your **time series**. Yellow points indicate a p-value between 0.05 and 0.01. Red indicates a p-value less than or equal to 0.01. *To view line level details, of a particular data point select a data point and click on it.*
- To see a visual depiction of your percentage query, click the **Explain Qry** button.
- To add the query to your **myESSENCE** dashboard, name the query and select **Add to myESSENCE**. To save the query to your **Query Manager**, select **Save Query**.

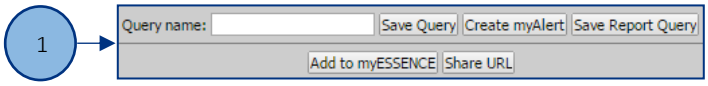
Sample Explain Query Display



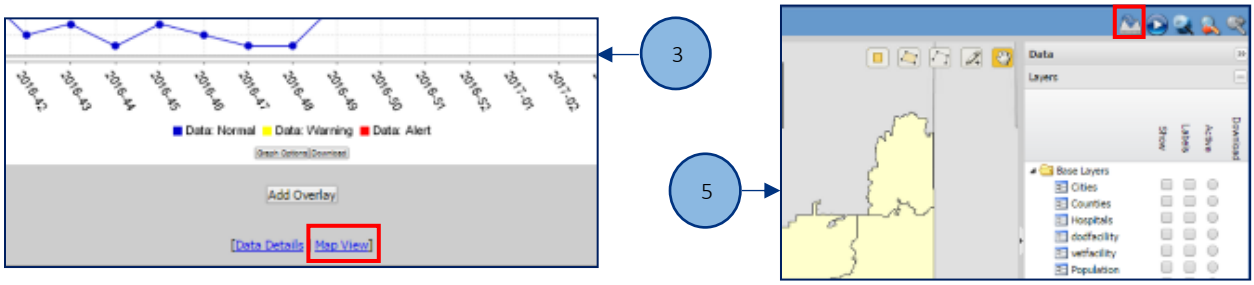
Creating a Report

Create customized report templates to publish your jurisdiction's data. The process can be a bit *clunky*, but once you have gone through the process it is easy (or easier) to replicate.

1. After creating a query in the Query Portal, name it and select **Save Report Query** in the **Query Options** window.

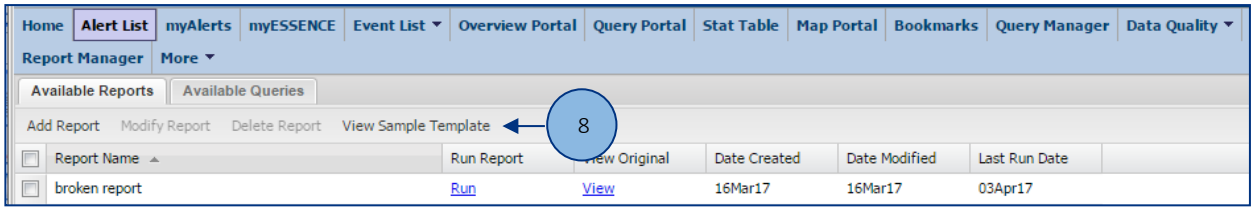


2. Add a grouping and edit your query in the **Edit Saved Query** popup.
3. If you would like to add a map to your report, select **Map View** below your time series.
4. Choose the layers and scale for your map in the **Map Options** popup window.
5. In the Map Portal, edit the layers and results to be shown for your map. When it is complete, save your map by selecting the highlighted icon in the top left menu bar.

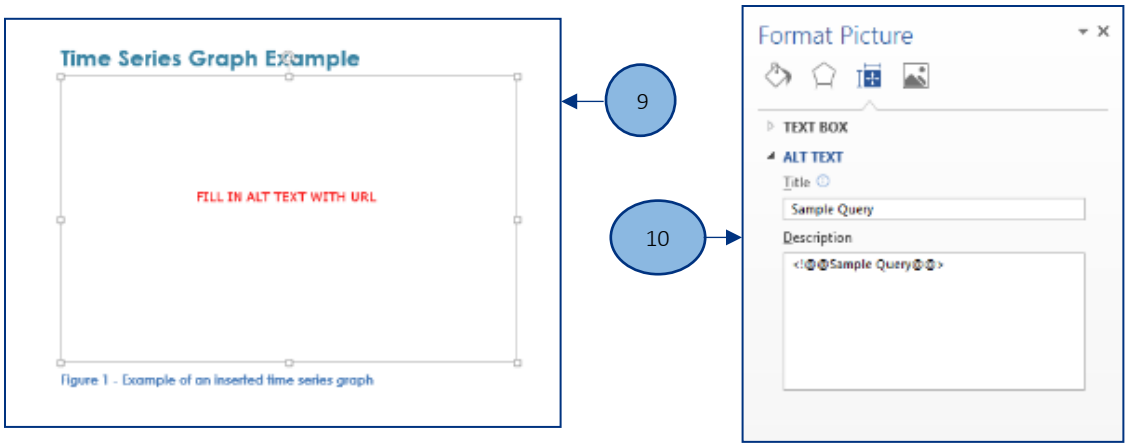


6. Your map will open in a popup window. Select **Save for Report.**

7. In the **Query Sharing Options**, name your map and select a grouping (category) for it. Select **Save.**
8. Navigate to **Report Manager** in the ribbon bar and select **View Sample Template.**



9. The sample template will download as a .docx file. Open it and right click on the **Time Series Graph Example.**



10. In the **Format Picture** window, select **Alt Text** and enter the name of your query between the @@symbols as it appears in the **Available Queries** tab. Repeat for your map in the **Map Example** box.
    - Once you have made any desired modifications to the report template (e.g., text, insert placeholders for time series or maps), save the template report.

Once you have saved your report. Return to **Report Manager** and select the **Add Report** button under the **Available Reports Tab.**

11. In the **Report Upload Form**, name your report and select the appropriate file to upload from your computer. **Save** your report.
12. Find your report from the list of **Available Reports** and select the associated **Run Report** link. The **View Original** link will run the report with the original timeframes specified for time series or maps.
13. A **Report Options** window will open. Select your desired date range for your report.
14. The report will download as a .docx file. Edit whatever details you choose within it and export it as a .pdf. You may share in accordance with RHINO data publication guidelines (here and here).

More Expert User Tips

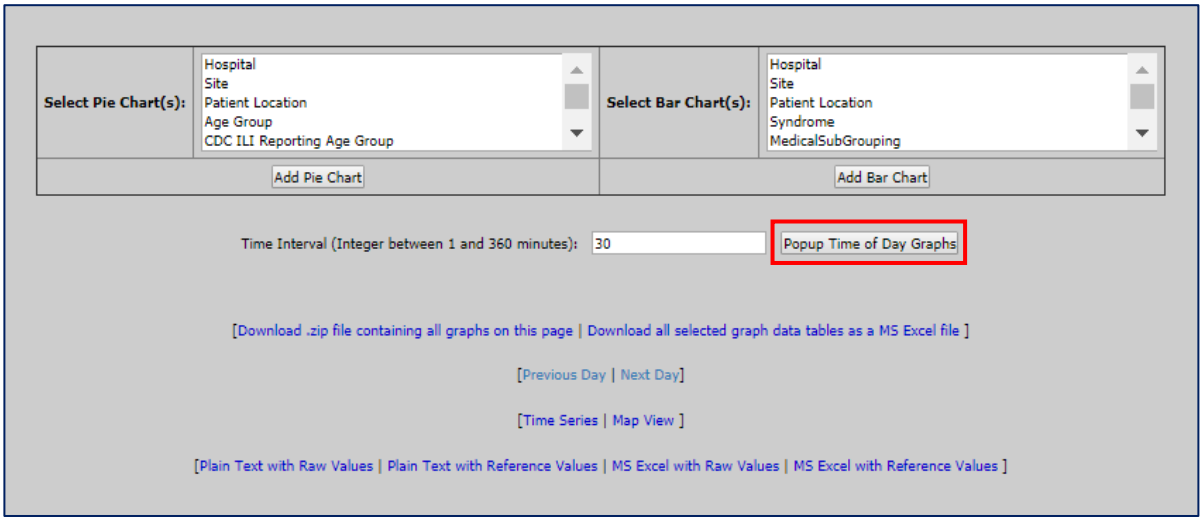
Growing Your ESSENCE Skills

Anyone can be an expert ESSENCE user! This section includes some user-suggested tips to help you navigate ESSENCE and create more informative graphics. If you feel like your team or organization would benefit from a site visit for a complimentary in-person ESSENCE training, please contact RHINO to discuss scheduling.

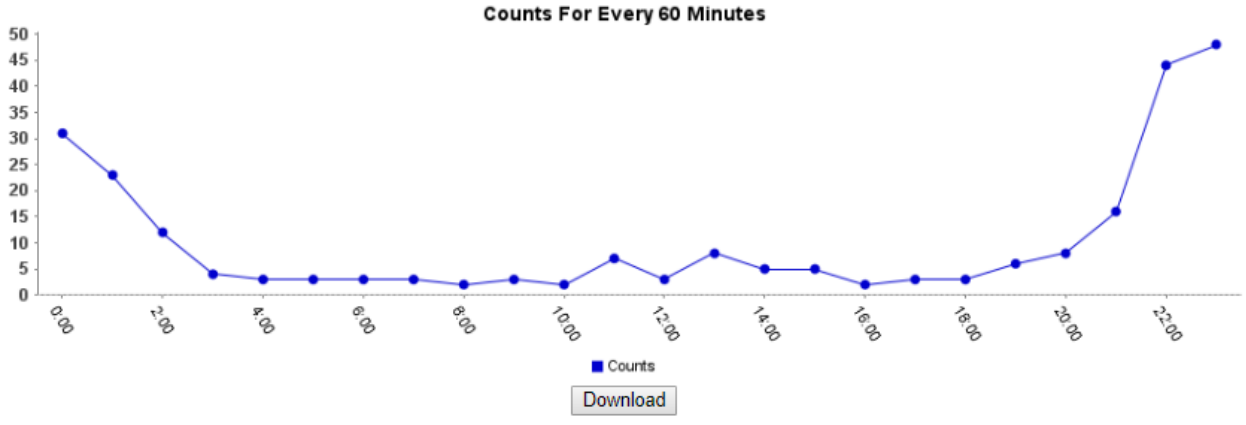
Viewing Time of Day Information

There are times when it may be helpful to view the time of day when patients have presented for care. Some examples of this may be identifying times of day when facilities see higher volumes of visits for firework injuries or potentially avoidable emergency department visits.

You can view time series graphs showing the time of day when patients initiated care by opening the data details output for your visits of interest. Just above the data details table, click the **Popup Time of Day Graphs** button.



Clicking the button will open a popup window of visit volumes in 30, 60, 90, and 120 minute intervals. Below each graph will be a **download** button, which you can use to download the graph.



Identifying Visits by Patients Seen Outside their Jurisdiction

Finding visits by residents from your jurisdiction seen at facilities in other jurisdictions

- Use the **Facility Location (Full Details)** data source.
- Set the **Hospital Region** field as all counties in Washington State except those, which make up your jurisdiction.
- Set the **Patient Location** field as the county or counties, which make up your jurisdiction.

Finding visits by residents of other jurisdictions at facilities in my jurisdiction

- Use the **Patient Location (Full Details)** data source.
- Set the **Patient Region** field as all counties in the state except those, which make up your jurisdiction.
- Set the **Facility** field as the healthcare facilities (hospitals, clinics, or both) in your jurisdiction which you would like to include in the query. If you need to know which hospitals are in your jurisdiction, please refer to the facility table.

Miscellaneous Tips and Tricks

- Choose a consistent naming convention to keep your saved queries tidy in your dashboards and Query Manager.
- Some queries will take a long time to complete. Do not refresh your browser or resubmit your query as this will not stop your previous query and will just further bog down ESSENCE. Instead, wait for your query to run to completion (which may take several minutes).
- Don't use the back button on your browser. Navigate using the buttons on the ribbon in ESSENCE. If you want to further investigate a specific data point or view data from a query a different way, right-click on it and select "open in a new tab".
- Use the **myFilters** option to save query parameters you frequently use (lower right corner of the Query Wizard).

Monitoring Visits of Interest

A variety of tools is available to help you monitor visits of interest, regardless of what topic areas your work contains. Tools to aid your surveillance generally fall into two broad categories: queries and dashboards. Queries are often "indexed" in the NSSP ESSENCE platform as CC and DD Categories. The queries use a combination of the chief complaint and discharge diagnosis (thus, CC and DD) fields.

Indexing improves the performance (e.g., the speed) of the query so that your work puts less stress on the system. This stress reduction is particularly important for large, complex queries run many, many times. To see the syntax of each query, click on the link for it provided here or visit the CC and DD Categories section of the Syndrome Definitions page under the More tab in ESSENCE. If you would like more in-depth information about using each of the queries, please contact us for assistance.

If you are interested in using pre-made dashboards, information about topical ones is available in the sections here, as well as in the section of this guide dedicated to myESSENCE dashboards.

This section contains guidance on queries, dashboards, and surveillance tips for:

- COVID-like Illness
- Influenza-like Illness
- Substance Use
- Suicide-Related Outcomes
- Wildfires
- Other Communicable Disease
- Other Environmental Conditions
- Other Injury and Violence

COVID-like Illness

Washington was the first state in the country to identify a case of COVID-19 and quickly began developing tools to monitor visits and hospitalizations potentially associated with that condition. RHINO staff and CDC partners have made a variety of resources available to aid your response efforts.

CC and DD Categories

CDC and RHINO have developed a range of syndrome definitions for COVID (and similar conditions) and indexed them as CC and DD Categories in the ESSENCE platform to improve their performance.

- CDC Coronavirus DD v1

This query identifies encounters, which include a diagnosis code for any coronavirus, including SARS-CoV-2. Diagnosis codes included in the query are B34.2 (Coronavirus infection, unspecified), B97.2 (Coronavirus as the cause of diseases classified elsewhere), J12.81 (Pneumonia due to SARS-associated coronavirus), and U07.1 (2019-nCoV Acute Respiratory Disease).

- CDC Influenza v1

This query identifies encounters, which include diagnosis codes for influenza. While influenza is not

necessarily a condition related to COVID-19, monitoring trends in influenza might be useful to track against coronavirus or CLI activity. This comparison may be particularly useful during times when individuals could conceivably co-present with influenza and COVID-19.

- CDC Pneumonia CCDD v1

This query identifies encounters, which include either diagnosis codes or chief complaint terms indicating that the patient has pneumonia. It excludes visits for pneumonia vaccination.

- CLI CC DD and Coronavirus v1

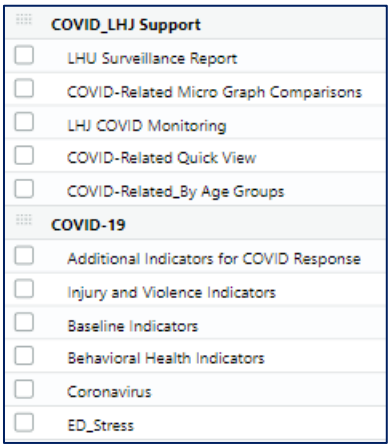
This query looks for encounters which have either a coronavirus diagnosis (as defined by the CDC Coronavirus DD v1) or which have diagnosis codes or chief complaint text indicating that the patient has a fever/chills *plus* either a cough, shortness of breath, or difficulty breathing. The logic for the query looks like this: COVID-19 OR [fever OR chills AND (cough OR shortness of breath OR difficulty breathing)]

Prior to the development of this query, two versions were also used which relied on weighted chief complaint terms, rather than chief complaint terms or diagnostic codes as the above query does. This approach captures fewer encounters, changing the count of visits identified as well as the scale of percentage query outputs.

  - Fever and Cough-Sob-DiffBr v1
  - Fever and Cough-Sob-DiffBr neg Influenza v1

Dashboards

To make monitoring COVID and related conditions, RHINO has built a number of dashboards to easily monitor visits and hospitalizations of interest both statewide and for specific regions. All of these dashboards are available in the myESSENCE Dashboard Library.



- COVID-Related Quick View

Year-over-year all age and age-stratified looks at pneumonia and COVID-like illness (CLI) visits, viewable for both emergency department only and admitted visits. Overlays of visits for coronavirus and flu diagnoses, flu diagnoses and ILI, and ILI visits stratified by admission.

- COVID-Related by Age Groups

Year-over-year all age and age-stratified looks at pneumonia and COVID-like illness (CLI) visits, viewable for both emergency department only and admitted visits. Overlays of visits for coronavirus and flu diagnoses, flu diagnoses and ILI, and ILI visits stratified by admission.

- Baseline Indicators

Weekly counts and percentages for various conditions to monitor baseline emergency department visit and hospitalization volumes. Includes stratifications by age group, race, and facility county. Queries are divided into three primary categories: Baseline Indicators (cardiovascular, stroke, dialysis, septicemia), Care Delivery (emergency department visit volumes, hospitalization volumes, deaths), and Other Care

Encounters (medication refills, dental encounters without admission, and homelessness).

- Behavioral Health Indicators

Weekly counts and percentages for various behavioral health conditions. Includes stratifications by age group, race, and facility county. Queries are divided into three primary categories: Mental Health (disaster mental health, psychological distress), Substance Use (suspected opioid overdoses, all drug, alcohol), and Suicide-Related Outcomes (suicide attempts, suicidal ideation, self-harm).

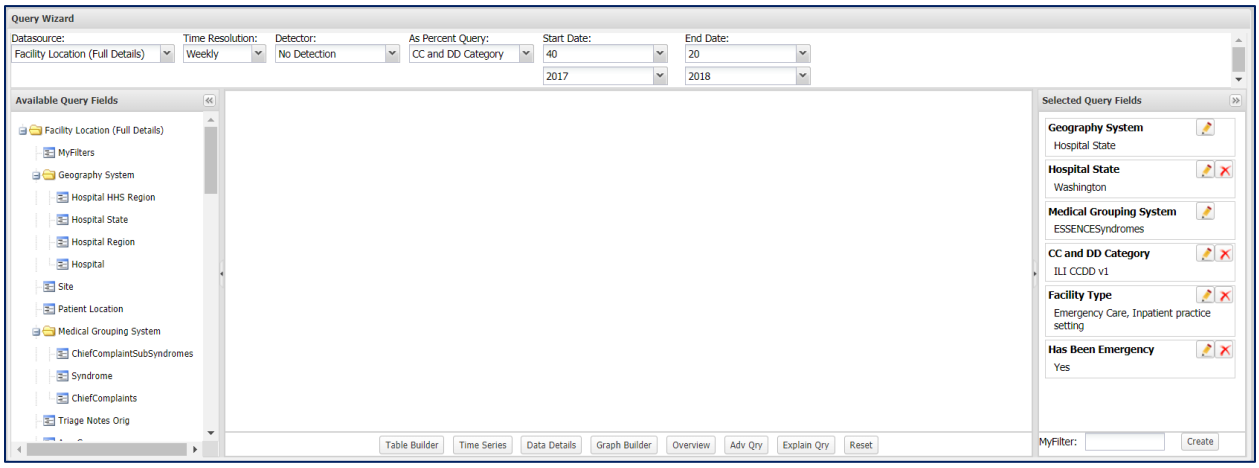
- Injury and Violence Indicators

Weekly counts and percentages for various behavioral health conditions. Includes stratifications by age group, race, and facility county. Queries include: domestic violence, suspected child abuse and neglect (sCAN), sexual violence, firearm injuries, motor vehicle collisions, and falls among adults 65 years and older.

Influenza-like Illness

One of the most common conditions users monitor using syndromic surveillance data around the world is influenza-like illness (ILI). This section provides some standard guidelines we recommend for using RHINO data to monitor influenza-like illness in the ESSENCE platform.

If you would like to quickly view ILI data using a variety of stratifications and time resolutions, RHINO has created a myESSENCE dashboard for ILI, which is available in the myESSENCE Dashboard Library.



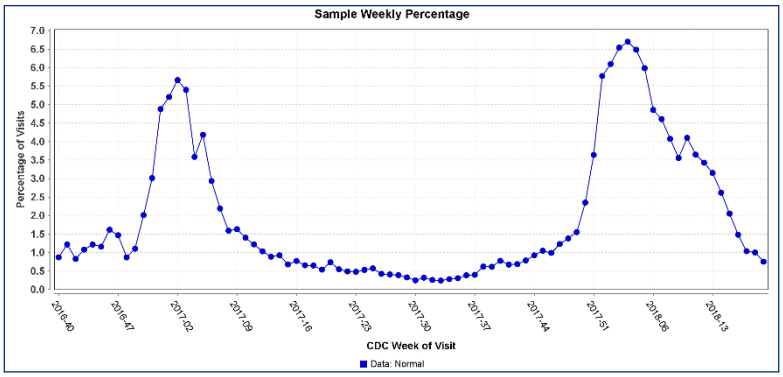
Getting Started

1. From the **Query Wizard toolbar**, select the **Data Source** of interest.
2. Choose weekly as your **Time Resolution**.
3. Choose CC and DD Category in **As Percent Query.**
4. Choose the **Start** and **End Dates** of interest for your query.
    - Influenza season generally begins at CDC Week 40 and ends at CDC Week 20.
    - It may be helpful to go back one or more years to compare influenza seasons.
    - Facility start points can be found in the Appendix.
5. Select the parameters you would like to include in your query in the **Available Query Fields**

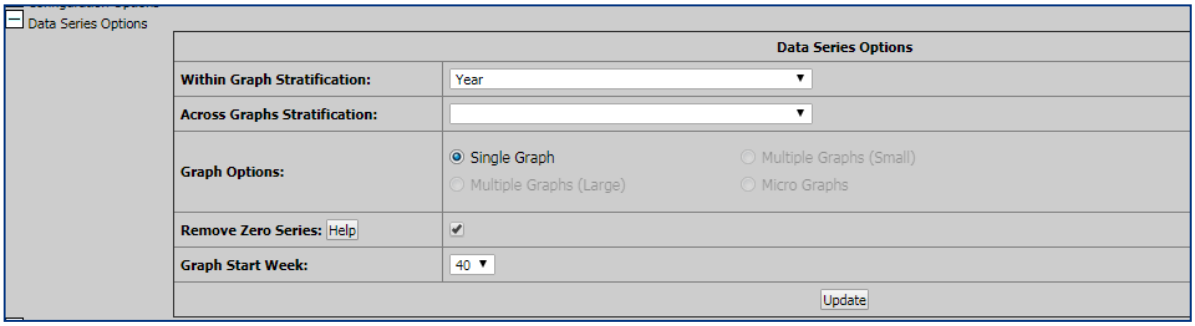
window.

- To select your facilities, either select your desired facility types in the **Facility Types** field or directly select the facilities you would like to include in the **Hospital** field. For more information on which facilities are available in your jurisdiction, refer to the appendix on **page 42**.
- Select ILI CCDD v1 in the **CC and DD Category** field.
- Select the desired patient class categories from the **Has Been Emergency**, **Has Been Inpatient**, and **Has Been Outpatient** fields. More information about patient class is available in that section of this guidebook.

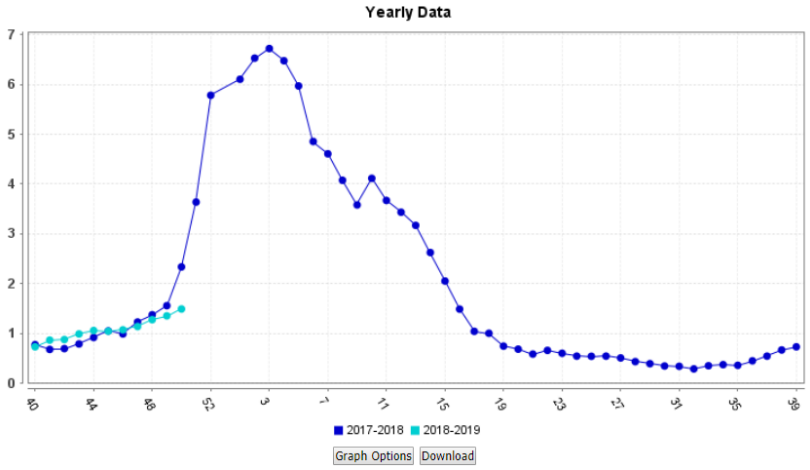
6. Check that your query parameters all appear in the **Selected Query Fields** window.
7. Click **Time Series** to run your query.



8. Open the **Data Series Option** dropdown above your time series graph.



9. Set Year as your **Within Graph Stratification.**
10. Set 40 as your **Graph Start Week.**
11. Click **Update** and your query will update below.

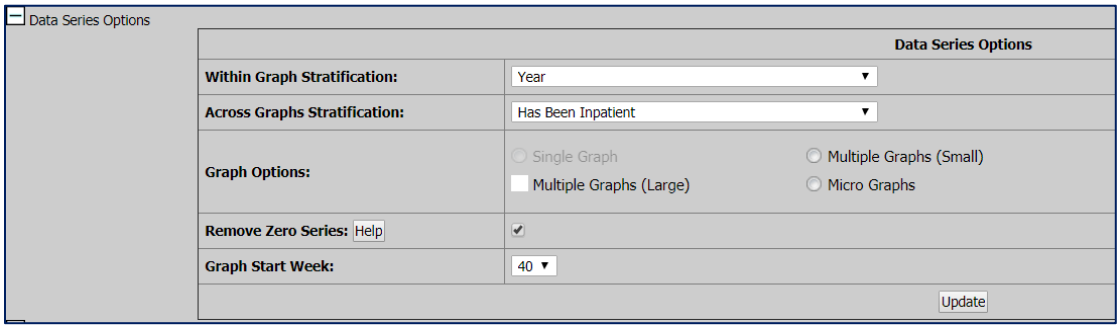


12. If desired, save your query to the **Query Manager** or to a **myESSENCE** dashboard.
13. To modify your graph title and axes, click **Graph Options** and make your changes.
14. **Download** a copy of your graph.

Stratifying by Patient Class

A key piece of understanding the severity of influenza in a given season (and its consequential burden on communities) is to monitor hospitalizations for influenza-like illness. You can do this easily in ESSENCE by stratifying visits using patient class.

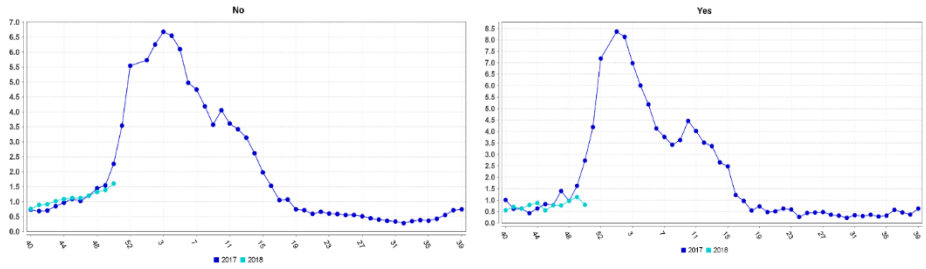
1. Beginning with the year-over-year time series we created above, open the **Data Series Options** dropdown window again.



2. If you would like to have a year-over-year graph for each of the time series graphs, keep Year as your **Within Graph Stratification**.
3. Select Has Been Inpatient as your **Across Graph Stratification.**
4. Keep 40 as your **Graph Start Week**.
5. Click **Update**.
6. If desired, save your query to the **Query Manager** or to a **myESSENCE** dashboard.
7. To modify your graph titles and axes, click **Graph Options** and make your changes.
8. **Download** copies of your graphs.

Interpreting Your ILI Data

The second time series graph above shows a year-over-year display of the weekly percentage of emergency department visits for a chief complaint indicating influenza-like illness or a diagnosis of influenza at Washington State emergency departments between CDC week 40 of 2017 and CDC week 50 of 2018. The graph does not show all cases of influenza in Washington State and does not include visits to outpatient clinics.



The two graphs above show year-over-year displays for the weekly percentage of emergency department visits for a chief complaint of influenza-like illness or a diagnosis of influenza between CDC week 40 of 2017 and CDC week 50 of 2018. The first graph (labelled "no") shows patients who *were not admitted* (**Has Been Inpatient** = No). The second graph (labelled "yes") shows patients who *were admitted* (**Has Been Inpatient** = Yes). Viewing visit records in this way allows you to compare flu seasons for both hospitalizations and visits, which resulted in the patient being discharged directly.

Although the number of facilities changed substantially over the period displayed, the choice to use a percentage rather than counts of visits allows us to reasonably assume the graphs show true trend changes over time (i.e., the rise is not due to an increased number of facilities reporting to RHINO). A second benefit of using percentages for monitoring ILI is that we are able to see not just the overall rise in visits for ILI, but how it relates to the total number of emergency department visits.

Expert User Tip

While monitoring ILI, RHINO often looks at:

- All emergency visits
- Primary and urgent care visits
- Hospitalizations
- Deaths

To aid your surveillance, RHINO maintains a comprehensive ILI myESSENCCE dashboard.

Substance Use

CC and DD Categories

Monitoring visits for drug use continues to be an important topic for many jurisdictions and users. To facilitate easy and consistent surveillance for visits for substance use (particularly opioids and stimulants), NSSP, ISDS, and users across the country have developed a range of syndrome definitions and indexed them as CC and DD Categories in the ESSENCE platform to improve their performance.

If you would like more in-depth information about using each of the queries, please see this presentation from Natasha on using them or contact us for assistance.

- CDC Alcohol v1

This query identifies encounters related to alcohol use. It does not exclude visits for withdrawal or detox.

- CDC All Drug v1

This query identifies encounters broadly related to drug use. This will include visits for overdose, detox, and prescription medication issues.

- CDC Heroin Overdose v4 (v1 through v3 also available)

This query identified encounters specifically for heroin overdoses. It will exclude other opioid-related visits and those for heroin use disorder, which do not involve an overdose event.

- CDC Opioid Overdose v2 (v1 also available)

This query identifies encounters for suspected opioid overdoses broadly (including those involving heroin). It will exclude other opioid-related visits, which do not involve an overdose.

- CDC Stimulants v3 (v1 and v2 also available)

This query identifies encounters for stimulant use, regardless of whether there was an overdose event. Stimulants include methamphetamines, MDMA/ecstasy, and prescription stimulants like Adderall.

- Marijuana v2 (v1 also available)

This query identifies visits related to marijuana use, including poisonings among children who have consumed edibles.

- CDC Vaping and E Cig Injuries v1

This query looks for encounters associated with e-cigarette and vaping injuries (EVALI). It was created in response to the 2019 outbreak of acute pulmonary disease associated with e-cigarette and vaping.

Dashboards

- Behavioral Health Dashboard

  Weekly counts and percentages for various behavioral health conditions. Includes stratifications by age group, race, and facility county. Queries are divided into three primary categories: Mental Health (disaster mental health, psychological distress), Substance Use (suspected opioid overdoses, all drug, alcohol), and Suicide-Related Outcomes (suicide attempts, suicidal ideation, self-harm).

- LHJ Report Companion Dashboard

Time series graphs and two-way tables showing percentages of emergency department visits for the All Drug v1, Heroin Overdose v4, and Opioid v2 queries.

- Pulmonary and Vaping

Encounters for pulmonary diseases, as well as those, which seem to be specifically related to e-cigarette and vaping injuries.

Developing Your Own Queries

Substance use patterns can change quickly and new synthetic drugs (e.g., changes to fentanyl composition) can cause overdose fatalities before public health recognizes them in the community. In Natasha's presentation, she discusses looking for visits associated with Kratom use during a salmonella outbreak associated with it.

If you would like to develop your own syndrome definition, there are tips available here in this guidebook to help you get started. You can also reach out for help to RHINO staff and the ISDS Community of Practice through the ISDS forums.

If you develop a syndrome definition, which seems to work well, please consider sharing it with the broader syndromic community. Other users here in Washington, as well as nationally could benefit from your work. You can share your queries via the ISDS forums, in the Syndrome Library, and by requesting that it be indexed as a new CC and DD Category.

Suicide-Related Outcomes

Many communities are interested in monitoring healthcare encounters for both fatal and non-fatal suicide-related outcomes. Washington State is one nine sites across the country participating in the Emergency Department Surveillance for Non-fatal Suicide-Related Outcomes (ED-SNSRO) cooperative agreement with the CDC.

CC and DD Categories

In addition to the **Self-Harm Query** (which is not yet indexed), NSSP ESSENCE has several indexed queries available for users to leverage to monitor these types of encounters in their communities.

To see the syntax of each query, click on the link for it provided here or visit the CC and DD Categories section of the Syndrome Definitions page under the More tab in ESSENCE. If you would like more in-depth information about using each of the queries, please contact us for assistance.

- CDC Suicide Attempt v1

This query identifies for encounters related to a suicide attempt or self-directed violence with the intent to die as a result of the behavior. It uses both chief complaint terms and discharge diagnoses to identify these encounters

- CDC Suicidal Ideation v1

This query identifies for encounters related to suicidal ideation, as well as thoughts or plans to engage in suicide-related behavior. It uses both chief complaint terms and discharge diagnoses to identify these encounters.

- SDC Suicide Related v1

This query identifies encounters for stress, anxiety, phobic anxiety, acute PTSD, and panic. The Syndrome Definition Committee of the NSSP Community of Practice developed it.

Dashboards

To facilitate easy monitoring of these indicators, as well as other behavioral health conditions, RHINO has created a Behavioral Health Indicators dashboard, which is available in the myESSENCE Dashboard Library for easy access.

The dashboard includes weekly counts and percentages for various behavioral health conditions. Includes stratifications by age group, race, and facility county. Queries are divided into three primary categories: Mental Health (disaster mental health, psychological distress), Substance Use (suspected opioid overdoses, all drug, alcohol), and Suicide-Related Outcomes (suicide attempts, suicidal ideation, self-harm).

Wildfires

Cross-Border Wildfire Workgroup

Washington State and Oregon participate in a cross-border workgroup with a variety of resources freely available to partners. The Workgroup page is available on the RHINO Community of Practice SharePoint.

Amanda Dylina Morse presented on behalf of the Workgroup at the 2019 CSTE Disaster Epidemiology Workshop. The presentation slides are available here. Kacey Potis also gave a presentation in June 2019 to the RHINO Community of Practice.

Dashboards

- WA_Wildfire

This dashboard facilitates monitoring of health effects from wildfire smoke, including: respiratory conditions (broad, asthma, pneumonia, bronchitis, COPD), cardiovascular conditions (broad, ACS, Angina, MI), stroke, PM2.5 concentrations, smoke complaints, smoke-related symptoms, and daily ED Visits (emergency department/outpatient/inpatient, East/West Washington, age groups)

- Wildfire_V2

Provides a concise, quick-look version of the WA_Wildfire dashboard for daily monitoring. Includes queries for PM2.5 concentrations, respiratory conditions, and smoke complaints.

Digging into the Visits

An ongoing challenge to monitoring visits that may be associated with wildfires is that the symptoms could also correspond to respiratory diseases like COVID. Your jurisdiction may also have only a small number of visits, making it difficult to determine is an increase is meaningful, even if it is statistically significant.

RHINO encourages you to use the free-text fields (like the triage notes and clinical impression) to thoroughly investigate these visits to determine if they may be related to wildfire activity. The tables below represent some ideas for how you might investigate and stratify the visits. The first row in each table is intended to be an example of how you might utilize the fields.

Region	Date	Alert Type (Red/Yellow)	Category	Age Group(s)	Mention of Smoke (Y/N)	Visit Count and Description
98282	9/9	Red	Asthma	00-05	Y	4 visits mentioning reaction to wildfire smoke

Date	Visit Count	Smoke Complaint Related to Wildfire Smoke
9/9	3	SOB, wheezing, chest pain

Other Communicable Diseases

NSSP ESSENCE has a variety of queries for communicable diseases available in the platform and users have added several helpful dashboards to the myESSENCE Dashboard Library.

CC and DD Categories

- CDC AFM Broad v1 – Limit to Pediatric

This query looks for encounters related to Acute Flaccid Myelitis (AFM) using a broad definition. It identifies visits using both chief complaint and diagnosis codes.

- CDC AFM Narrow v1 – Limit to Pediatric

This query looks for encounters related to Acute Flaccid Myelitis (AFM) using a narrow definition. It identifies visits using both chief complaint and diagnosis codes.

- CDC Chickenpox v1

Identifies encounters for varicella using chief complaint terms and diagnosis codes. Excludes encounters for vaccination.

- CDC Chronic Hepatitis C v1

Identifies encounters for chronic Hepatitis C using chief complaint terms and diagnostic codes.

- CDC Food Poisoning v1

Identifies encounters for food poisoning using chief complaint terms and diagnosis codes.

- CDC Hand Foot and Mouth v1

Identifies encounters for hand foot and mouth disease using chief complaint terms and diagnosis codes.

- CDC Hepatitis A v1

Identifies encounters for Hepatitis A using chief complaint terms and diagnosis codes. Excludes encounters for vaccination

- CDC Legionella v1

Identifies encounters for legionella using chief complaint terms and diagnosis codes.

- CDC Lyme Disease v1

Identifies encounters for Lyme disease using chief complaint terms and diagnosis codes.

- CDC Measles CCDD v1

Identifies encounters for measles using chief complaint terms and diagnosis codes. Excludes encounters for vaccination

- CDC Pertussis v1

Identifies encounters for pertussis using chief complaint terms and diagnosis codes. Excludes encounters for vaccination

- CDC Shigella v1

Identifies encounters for Shigella using chief complaint terms and diagnosis codes.

- CDC Smallpox v1

Identifies encounters for smallpox using chief complaint terms and diagnosis codes.

- Mumps v1

Identifies encounters for mumps using chief complaint terms and diagnosis codes. Excludes encounters for vaccination.

- Norovirus v1

Identifies encounters for norovirus using chief complaint terms and diagnosis codes.

- Visits of Interest

Identifies encounters for a variety of conditions which may be of interest or reportable to public health. Encounters are identified using chief complaint terms and diagnostic codes.

Dashboards

A number of dashboards are available in the myESSENCE Dashboard Library and can be easily downloaded into your account.

- Measles

Time series trends and visit-level details for encounters related to measles (excluding vaccination) using broad, medium, and narrow definitions. The dashboard also displays encounters with a measles diagnosis.

- Visits of Interest

Displays trends and visit-level details for using the Visits of Interest query.

Other Environmental Conditions

CC and DD Categories

- Cold Related Illness v1

Identifies encounters for cold-related conditions, including hypothermia and frostbite. The query excludes follow up visits for conditions like frostbite. RHINO often uses this query in combination with the Homelessness v1 query.

- Heat Related Illness v2 (v1 is also available)

Identifies encounters for heat-related conditions, including heatstroke. RHINO often uses this query with the Homelessness v1 query.

Other Injury and Violence

CC and DD Categories

- All Traffic v2

This query looks for encounters related to injuries associated with motor vehicles, inclusive of pedestrian and non-car motorized vehicles. The RHINO Program developed this query.

- CDC Firearm Injury v1

This query identified encounters associated with firearm injuries. It is includes intentional and unintentional, as well as interpersonal and self-directed injuries.

- CDC Suspected Child Abuse and Neglect v1

Identifies encounters related to suspected child maltreatment, including abuse and neglect.

Other Available Queries

- Domestic Violence

This query identifies encounters related to domestic violence using multiple free-text fields (Chief Complaint History, Clinical Impression, and Triage Notes), as well as diagnostic codes. The query uses a broad definition to include violence, which takes place in homes and care-settings by both family and

non-family perpetrators of violence.

Including the Triage Notes Orig and Clinical Impression fields was necessary to improve capture of visits using the contextual details in the Triage Notes Orig and Clinical Impression fields substantially improved the number of encounters, however, the "noise" in these fields decreases the specificity of the query. The majority of false positives are individuals who attack their caregivers in the hospital.

- Drowning and Submersion

This query identifies encounters for drowning and submersion events. The query identifies visits of interest based on both chief complaint text and diagnostic codes. While the query does not search in the Triage Notes Orig and Clinical Impression fields, they may be particularly useful for gleaning contextual information about the injury (e.g., type of water, use of alcohol, length of time submerged).

- E-Scooter and Bike Share Injuries

This query identifies encounters related to e-scooter and bike share injuries. There is also a myESSENCE dashboard available in the myESSENCE Dashboard Library to facilitate its use.

- Falls

This query identifies encounters for a fall; the version linked above is limited to patients 65 years and older. The query identifies visits of interest based on both chief complaint text and diagnostic codes.

- Occupational Injuries

This query identifies encounters related to occupational injuries, including falls, lacerations, and exposures.

- Sexual Violence

This query identifies encounters related to sexual violence of any kind, including workplace-based violence. Both this sexual violence query and those indexed in NSSP ESSENCE were developed as a collaboration between Washington State and NSSP.

While NSSP ESSENCE contains indexed queries for sexual violence, the version linked above queries the Chief Complaint History field, which provides better capture by looking at all updates to the chief complaint field, rather than just the original chief complaint text. This adaption is necessary to capture visits for which the patient was initially unwilling or unable to provide the true reason for their visit.

Dashboards

The RHINO program uploads many of their dashboards to the myESSENCE Dashboard Library. However, if you have a need or think something may already be made and don't see it there, please contact us for assistance.

- All Traffic – Pedestrian
- All Traffic – Pediatric
- E-Scooter or Bike Share
- Injury and Violence

Data Source Details

NSSP Data Sources

Patient Location (Full Details)	Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on **patient residence**, queries will only return records for patients who reside in these counties or states you select (regardless of the location of the Washington State facility they presented to). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, you will get a record for each visit that matches your query criteria. If a single visit is assigned to multiple syndromes or subsyndromes, a record will be returned for each syndrome/subsyndrome for which a visit meets the criteria. *This may result in duplicate records being returned.*
Patient Location (Limited Details by HHS Region) "National Picture"	Clinical data (ED, inpatient, outpatient, urgent care). Includes data contributed by **all** civilian sites across the country. All users affiliated with a public health authority, regardless of location, have access to the full dataset. Clinical information is limited to visit date, syndrome/subsyndrome categories, patient class and disposition category. Patient demographics are limited to age group, gender, and DHHS region. Potentially identifiable information (e.g., age, ZIP Code county, chief complaint, diagnoses, triage notes, facility name) is suppressed. Records can only be searched using a subset of all fields.
Patient Location and Visit (Full Details)	Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on **patient residence**, queries will only return records for patients who reside in these counties or states you select (regardless of the location of the WA facility they presented to). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your results will include a single, de-duplicated list of visit records that match your query criteria.
Facility Location (Full Details)	Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on **facility location**, queries will only return records for patients who were seen at **facilities** in these counties (regardless of patient residence). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, you will receive a record for each visit that matches your query criteria. If a single visit is assigned to multiple syndromes or subsyndromes, a record will be returned for each matching syndrome/subsyndrome a visit is assigned to. *This may result in duplicate records being returned.*

Facility Location (Limited Details by HHS Region) "National Picture"	Clinical data (ED, inpatient, outpatient, urgent care). Includes data contributed by **all** civilian sites across the country. All users affiliated with a public health authority, regardless of location, have access to the full dataset. Clinical information is limited to visit date, syndrome/subsyndrome categories, patient class and disposition category. Patient demographics are limited to age group, gender, and DHHS region. Potentially identifiable information (e.g., age, ZIP Code, county, chief complaint, diagnoses, triage notes, facility name) is suppressed. Records can only be searched using a subset of all fields.
Facility Location and Visit (Full Details)	Clinical data (ED, inpatient, outpatient, urgent care). If your data access is limited to certain counties based on **facility location**, queries will only return records for patients who were seen at **facilities** in these counties (regardless of patient residence). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your results will include a single, de-duplicated list of visit records that match your query criteria.
Chief Complaint Query Validation	This is a collection of all chief complaints and discharge diagnoses contributed to NSSP ESSENCE. The only other piece of information that can be viewed along with these fields is the week and year of visit. This tool is intended to facilitate development and validation of syndrome definitions that use chief complaint and discharge diagnosis. Once developed, these syndrome definitions can then be applied to one of the "National Picture" datasets, which have chief complaint and diagnosis suppressed.
Department of Defense Data	Clinical data from US Department of Defense domestic healthcare facilities. It is very similar to the other "Full Details" datasets. *At this time, this data is not available for us.*
Veterans Affairs Data	Clinical data from US Veterans Affairs healthcare facilities. It is very similar to the other "Full Details" datasets. *At this time, this data is not available for use.*
Weather Data	Weather data (e.g., temperature, precipitation, wind, sun) from National Weather Service stations through the USA. Temperature is in degrees Fahrenheit and precipitation is in inches.
Air Quality Data	Air quality data from more than 120 reporting agencies and 2,700 stations, including 101 stations in Washington State. Air quality parameters Include Carbon Monoxide (8 hour), Ozone (1 hour, 8 hour), $PM_{2.5}$ (24 hours), $PM_{2.5}$ (24 hours), and Sulfur Dioxide (24 hours).

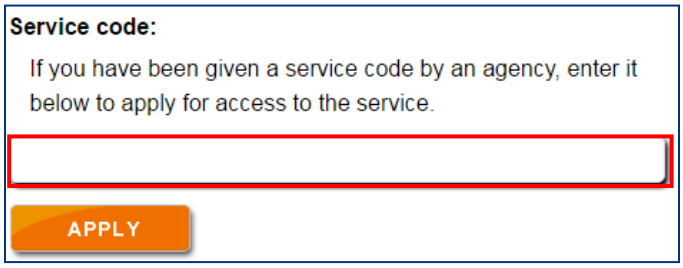
Washington ESSENCE Fundamentals

Accessing Washington ESSENCE

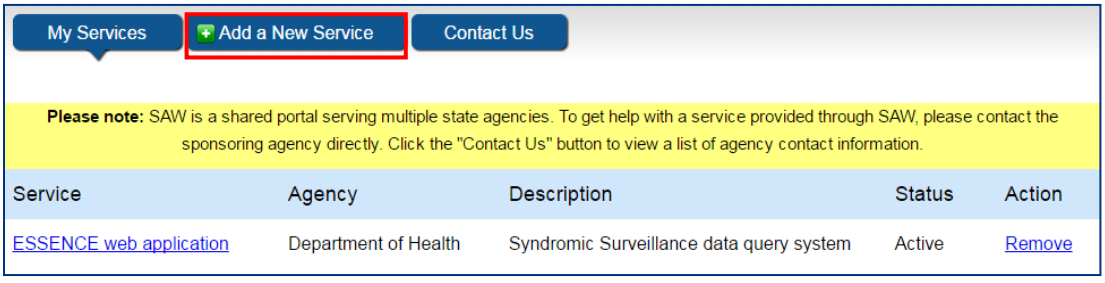
To access the Washington ESSENCE system from outside the Department of Health network you will need to:

1. Create an account with Secure Access Washington. A detailed video of this process can be found online here.

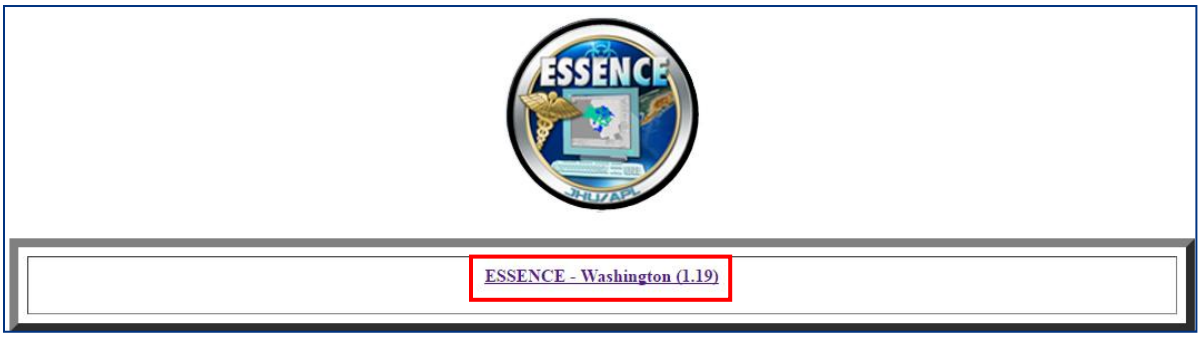
2. Add Washington ESSENCE to the list of your services using the service code you received from RHINO with your Washington ESSENCE credentials. A detailed video of the process can be found online here.



3. Verify that you have added Washington ESSENCE to your service list. For instructions on logging into Washington ESSENCE, please see the next page. Once you have added Washington ESSENCE to your SAW account (see previous page), you will be able to log into Washington ESSENCE.



4. Navigate to the SAW login page and enter your SAW credentials (Please note, these are not your NSSP or Washington ESSENCE credentials).
5. Select ESSENCE web application from your list of services.
6. SAW will prompt you to confirm your identity with challenge questions or via your out-of-band phone or email address. Select the method of your choice and follow the prompts.
7. After you have verified your identity, SAW will take you to the Washington ESSENCE landing page. Click the ESSENCE—Washington (1.19) link.



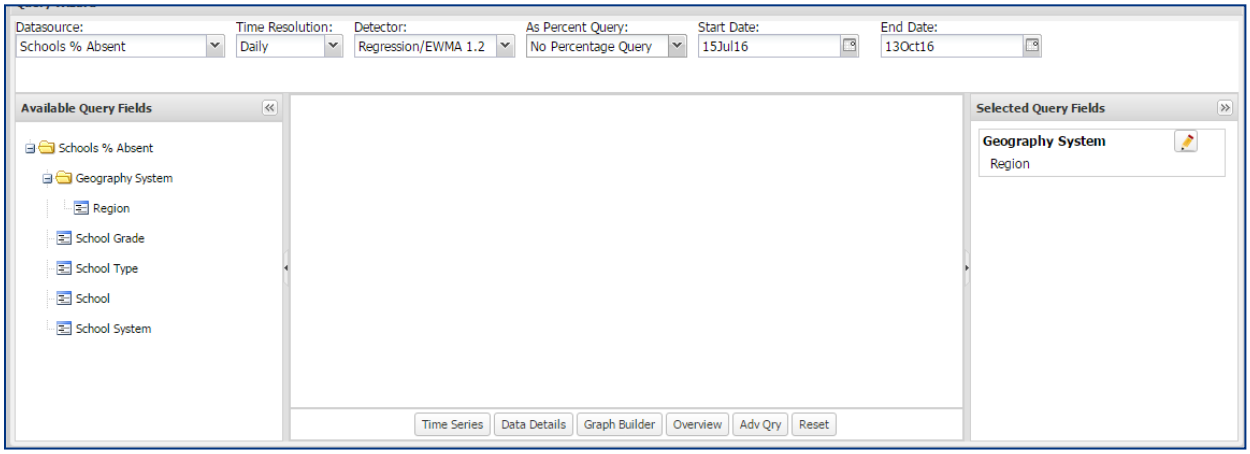
8. Enter your credentials in the boxes on the login page.
    - *Please note, your Washington ESSENCE credentials are not the same as your NSSP ESSENCE credentials.*
9. Once you have entered the Washington ESSENCE site, you can view and interact with RHINO data. If you have trouble accessing Washington ESSENCE, please email the Syndromic Mailbox.

Common Tasks in Washington ESSENCE

Querying School Absenteeism Data

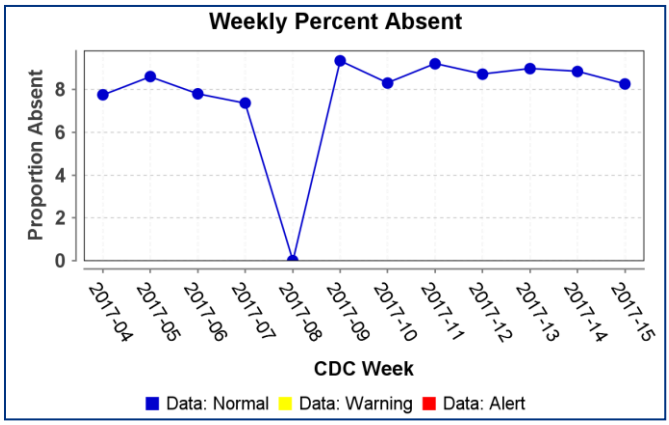
WA School absenteeism data represents data collected by the Washington State Information Processing Center (WSIPC). It contains data for many, but not all, schools in the state.

Create queries of **School Absenteeism** data in the **Query Portal**.



1. Select **Datasource** *School % Absent.*
2. Determine **Time Resolution** for your query.
3. Choose the **Start** and **End Dates** of interest for your query.
4. Determine how you want to limit the data in the **Available Query Fields** Menu:
    - **Region** (i.e., county) of school
    - **School Grade**
    - **School Type** (i.e., education level)
    - **School**
    - **School System** (i.e., school district)
5. Verify that all or your query selections are in the **Selected Query Fields Menu.**
6. To view a graph of the percent of student absent, click **Time Series.**

Sample Explain Query Display



Data Source Details

Washington ESSENCE Data Sources

ER Data by Patient Location	Clinical data (ER and urgent care). If your data access is limited to certain counties based on **patient residence**, queries will only return records for patients who reside in these counties, regardless of the location of the facility. **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, you will receive a record for each visit that matches your query criteria. If a single visit was assigned multiple syndromes or subsyndromes, a record will be returned for each it was assigned. *This may result in duplicate records being returned.*
ER Limited View Data by Patient Location	Clinical data (ER and urgent care). If you data access is limited to certain counties based on **patient residence**, results will only results will only return records for patients who reside in these counties, regardless of the location of the facility. **Data details** will return records with **limited visit-level information**. Clinical information is limited to syndrome category. Potentially identifiable information (e.g., age, ZIP Code, chief complaint, diagnoses, triage notes) are suppressed. Records can only be searched using visit date, county, syndrome, subsyndrome, and age group. If your query includes multiple syndromes or subsyndromes, your query results will include a record for each visit that matches your query criteria. If a single visit is assigned to multiple syndromes or subsyndromes, a record will be returned for each matching syndrome/subsyndrome it is assigned to. *This may result in duplicate records being returned*.
ER Data by Hospital Location	Clinical data (ER and Urgent care). If your data access is limited to certain counties based on **facility location**, queries will only return records for patients who were seen at facilities in these counties (**regardless of patient residence**). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your query results will include a record for each visit that matches your query criteria. If a single visit meets the criteria for multiple syndromes or subsyndromes, a record will be returned for each. *This may result in duplicate records being returned*.
ER Data by Patient Location and Visit	Clinical data (ER and Urgent care). If your data access is limited to certain counties based on patient residence, queries will only return records for **patients who reside** in these counties (regardless of the location of the WA facility they presented to). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your query will return de-duplicated list of records that match your search criteria.

ER Data by Hospital and Visit	Clinical data (ER and Urgent care). If your data access is limited to certain counties based on facility location, queries will only return records for patients who were seen at **facilities** in these counties (**regardless of patient residence**). **Data details** will return full records with all visit-level information included. If your query includes multiple syndromes or subsyndromes, your query will return de-duplicated list of records that match your search criteria.
Schools % Absent	School absenteeism data collected by the Washington School Information Processing Center (WSIPC). Includes daily absenteeism data by grade, school, school type, and school district.
Weather Data	Weather data (e.g., temperature, precipitation, wind, sun) from National Weather Service stations. Temperature is in degrees Fahrenheit and precipitation is in inches.

Appendix

Frequently Asked Questions

Q: What is the difference between NSSP ESSENCE and Washington ESSENCE?

A: In short, the two platforms have different data in them. Our clinical, air quality, and weather data go into NSSP ESSENCE. Washington ESSENCE currently houses our school absenteeism data and will eventually hold animal health and WEMSIS data as well. More information is available on here and here.

Q: How do I access to RHINO data?

A: If you are a Department of Health employee, you need to fill in RHINO's data request form and confidentiality agreement. If you work for one of our partners (e.g., a Tribal government, a local health jurisdiction, another state agency), check if you have a data sharing agreement in place with RHINO. If you do not have an agreement in place, you will need to establish one. Once you have a data sharing agreement in place for the organization, each user will fill in the data request form and confidentiality agreement. Data sharing agreements must be sent to the Department of Health in hard copy. The data request form and confidentiality agreement should be sent to the Syndromic Mailbox. More information is available here and here.

Q: When can I publish RHINO data?

A: You can publish RHINO data in accordance with the guidelines for publication of small numbers available on here and here.

Q: Can I calculate prevalence using RHINO data?

A: It is important to remember RHINO data are *visit-based* and not *patient-based* as many other datasets are. RHINO gathers data for all visits to reporting facilities, but some patients may be seen more than once for the same condition or may be transferred to a higher-level facility and appear as multiple visits. Additionally, the socioeconomic factors (e.g., insurance coverage) which may make someone *more likely* to be ill or injured may make them *less likely* to be able to access healthcare. For these reasons, we recommend you do not estimate prevalence using RHINO data.

Q: What is the best way to use rates with RHINO data?

A: Similar to the difficulties with estimating prevalence using RHINO data, using population-based rates can be challenging. The same factors, which may make someone more likely to be ill or injured could prevent them from seeking care for it. The distance between their home and healthcare facilities could also make it more challenging to seek care (or influence where they go), but likely would not make them less in need of it. Instead of using population-based rates, *we recommend using visit-based rates*. RHINO prefers the rate of visits for a given condition per 10,000 visits. If you need assistance calculating these rates, please contact us and we will be happy to help.

Q: Can I identify a patient visiting multiple facilities or making multiple visits? Can I link records in RHINO data?

A: Probably! We receive several identifiers for patients, which may help you, link records. Patient medical record number (MRN) will help link patients seen at the same facility or facility network multiple times. Patient name, date of birth, and residential ZIP Code are also included in ESSENCE and could be helpful for linking records. More information on linking is available here.

Q: Which conditions can I monitor using RHINO data?

A: You can monitor many conditions with RHINO data. Communicable diseases, chronic diseases, injuries and violence, and environmental issues are all common issues monitored using syndromic surveillance data around the country. The National Syndromic Surveillance Program's Community of Practice is a wonderful space to learn from what others around the country are doing. For more information about the strengths and limitations of RHINO data, see that section of this guidebook.

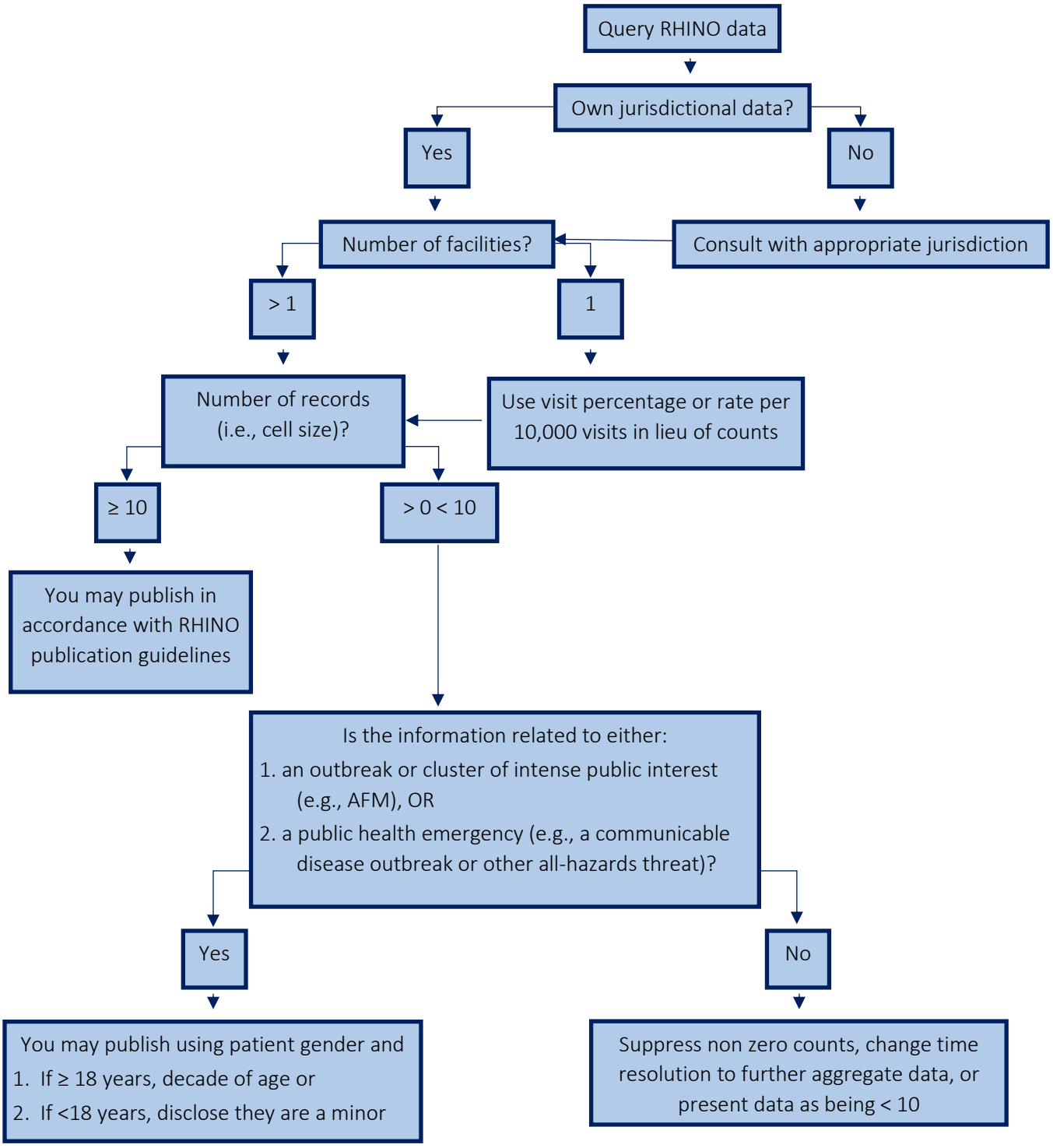
Q: What cleaning or redaction is done to the data before it goes into ESSENCE?

A: We do not perform any cleaning or redaction of the data in ESSENCE. Before a facility is considered to have "production-quality data" and their messages are sent to NSSP ESSENCE, we do have a process of checking the structure and content of the messages for completeness and correctness. We also have ongoing data quality processes to monitor drop-offs and overall degradations in data quality. If you notice a data quality issues (e.g., non-informative chief complaint text), please let us know and we can work with the facility to try to correct the issue. For more information, please see this presentation on our data validation practices.

Q: How are the weeks in ESSENCE calculated?

A: The weeks in ESSENCE are MMWR (Morbidity and Mortality Weekly Report) weeks and calculated from Sunday-Saturday of each week. This means that the last week of a year could overlap with the following year. A log of the dates associated with MMWR weeks is available here from the State of New Mexico.

Small Numbers Publication Decision Tree



Hospitals Available in NSSP ESSENCE

Facility Name	County	ESSENCE Facility ID	Date Available	Date Deactivated
Othello Community Hospital	Adams	WA-H_Othello	Oct-16	
Tri-State Memorial Hospital	Asotin	WA-H_Tri-State Memorial Hospital	Jul-19	
Kadlec Emergency Department Kennewick	Benton	WA-H_Kadlec Emergency Department Kennewick	Jul-17	
Kadlec Regional Medical Center	Benton	WA-H_Kadlec Regional Medical Center	Aug-18	
Prosser Memorial Hospital	Benton	WA-H_Prosser Memorial Hospital	Jul-18	
Trios Health Southridge Hospital	Benton	WA-H_ Trios Health Southridge Hospital	Jul-20	
Cascade Medical Center	Chelan	WA-H_Cascade Medical Center	Jan-19	
Central Washington Hospital	Chelan	WA-H_Central Washington Hospital	Feb-19	
Lake Chelan Community Hospital	Chelan	WA-H_Lake Chelan Community Hospital	Aug-18	
Wenatchee Valley Hospital	Chelan	WA-H_ Wenatchee Valley Hospital	Feb-19	
Olympic Medical Center	Clallam	WA-H_Olympia Medical Center	Jan-18	
Legacy Salmon Creek	Clark	WA-H_Legacy Health Salmon Creek	May-16	
PeaceHealth Southwest Medical Center	Clark	WA-H_PeaceHealth Southwest Medical Center	Oct-16	
PeaceHealth St. John Medical Center	Cowlitz	WA-H_PeaceHealth St. John Medical Center	Oct-16	
Ferry County Memorial Hospital	Ferry	WA-H_Ferry County Memorial Hospital	Sep-18	
Lourdes Medical Center	Franklin	WA-H_Lourdes Medical Center	Jul-19	
Columbia Basin Hospital	Grant	WA-H_Columbia Basin Hospital	Mar-20	
Coulee Community Hospital	Grant	WA-H_ Coulee Community Hospital	Oct-16	
Samaritan Hospital	Grant	WA-H_Samaritan Hospital	Oct-16	
Grays Harbor	Grays	WA-H_Grays Harbor	Oct-16	Oct-19

Community Hospital	Harbor	Community Hospital	Sep-20	
Summit Pacific Medical Center	Grays Harbor	WA-H_ Summit Pacific Medical Center	Nov-20	
Jefferson General Hospital	Jefferson	WA-H_Jefferson General Hospital	May-18	
St. Anne Hospital	King	WA-H_CHI-FHS Highline Medical Center	Feb-17	
St. Elizabeth Hospital	King	WA-H_CHI-FHS St. Elizabeth Hospital	Dec-16	
St. Francis Hospital	King	WA-H_CHI-FHS St. Francis Hospital	Dec-16	
Evergreen Health (Redmond)	King	WA-H_EvergreenHealth Redmond ED	May-17	
Evergreen Health (Kirkland)	King	WA-H_EvergreenHealth Kirkland	May-17	
Harborview Medical Center	King	WA-H_Harborview Medical Center	Aug-16	
MultiCare Auburn Medical Center	King	WA-H_MultiCare Auburn Medical Center	Feb-19	
MultiCare Covington Medical Center	King	WA-H_MultiCare Covington Medical Center	Feb-19	
Northwest Hospital and Medical Center	King	WA-H_Northwest Hospital and Medical Center	Oct-18	
Overlake Medical Center	King	WA-H_Overlake Hospital Medical Center	Sep-18	
Seattle Children's Hospital	King	WA-H_Seattle Children's Hospital	Jan-17	
Snoqualmie Valley Hospital	King	WA-H_Snoqualmie Valley Hospital	Aug-18	
Swedish Medical Center — Ballard	King	WA-H_Swedish Medical Center - Ballard	Apr-18	
Swedish Medical Center — Cherry Hill	King	WA-H_Swedish Medical Center - Cherry Hill	Apr-18	
Swedish Medical Center — First Hill	King	WA-H_Swedish Medical Center - First Hill	Apr-18	
Swedish Medical Center — Issaquah	King	WA-H_Swedish Medical Center - Issaquah	Apr-18	
Swedish Medical Center — Redmond	King	WA-H_Swedish Medical Center - Redmond	Apr-18	
UW Medical Center	King	WA-H_University of Washington Medical Center	Aug-16	
Valley Medical Center	King	WA-H_ Valley Medical Center	Dec-18	

Virginia Mason Medical Center	King	WA-H_Virginia Mason Medical Center	Jan-17	
Harrison Medical Center (Bremerton)	Kitsap	WA-H_CHI-FHS Harrison Medical Center-Bremerton	Dec-16	
St. Michael Medical Center	Kitsap	WA-H_CHI-FHS St. Michael Medical Center	Dec-16	
Kittitas Valley Community Hospital	Kittitas	WA-H_Kittitas Valley Community Hospital	Jan-19	
Klickitat Valley Health	Klickitat	WA-H_Klickitat Valley Health	Apr-18	
Skyline Hospital	Klickitat	WA-H_Skyline Hospital	May-18	
Morton General Hospital	Lewis	WA-H_Morton General Hospital	Oct-17	
Providence Centralia Hospital	Lewis	WA-H_Providence Centralia Hospital	Aug-17	
Lincoln Hospital	Lincoln	WA-H_Lincoln Hospital	Oct-16	
Odessa Memorial Healthcare Center	Lincoln	WA-H_Odessa Memorial Healthcare Center	Oct-16	
Mason General Hospital	Mason	WA-H_Mason General Hospital	Jan-18	
Mid-Valley Hospital	Okanogan	WA-H_Mid-Valley Hospital	Oct-16	
North Valley Hospital	Okanogan	WA-H_North Valley Hospital	Oct-17	
Three Rivers Hospital	Okanogan	WA-H_Three Rivers Hospital	Aug-18	
Ocean Beach Hospital	Pacific	WA-H_Ocean Beach Hospital	Jul-18	
Willapa Harbor Hospital	Pacific	WA-H_Willapa Harbor Hospital	Jan-18	
Newport Hospital	Pend Oreille	WA-H_Newport Hospital	Oct-16	
St. Anthony Hospital	Pierce	WA-H_CHI-FHS St. Anthony Hospital	Dec-16	
St. Clare Hospital	Pierce	WA-H_CHI-FHS St. Clare Hospital	Dec-16	
St. Joseph Medical Center	Pierce	WA-H_CHI-FHS St. Joseph Medical Center	Dec-16	
Bonney Lake Emergency Department	Pierce	WA-H_GSH Bonney Lake Emergency Department	Mar-20	
Parkland Emergency Department	Pierce	WA-H_GSH Parkland Emergency Department	Mar-20	
South Hill Emergency Department	Pierce	WA-H_GSH South Hill Emergency Department	Oct-20	

MultiCare Allenmore Hospital	Pierce	WA-H_MultiCare Allenmore Hospital	Feb-19	
MultiCare Good Samaritan Hospital	Pierce	WA-H_MultiCare Good Samaritan Acute Hospital	Feb-19	
MultiCare Mary Bridge Children's Hospital	Pierce	WA-H_MultiCare Mary Bridge Hospital	Feb-19	
MultiCare Tacoma General Hospital	Pierce	WA-H_MultiCare Tacoma General Hospital	Feb-19	
Peace Health Peace Island Medical Center	San Juan	WA_H_PeaceHealth Peace Island Medical Center	Jul-16	
Island Hospital	Skagit	WA-H_Island Hospital	Feb-20	
Skagit Valley Hospital	Skagit	WA-H_Skagit Valley Hospital	Jul-16	
Peace Health United General Medical Center	Skagit	WA-H_PeaceHealth United General Medical Center	Oct-16	
Cascade Valley Hospital	Snohomish	WA-H_Cascade Valley Hospital	Jul-18	
Evergreen Health (Monroe)	Snohomish	WA-H_EvergreenHealth Monroe	Jan-19	
Providence Regional Medical Center	Snohomish	WA-H_Providence Regional Medical Center	Aug-17	
Swedish Edmonds	Snohomish	WA-H_Swedish Edmonds	Apr-18	
Swedish Medical Center — Mill Creek	Snohomish	WA-H_Swedish Medical Center - Mill Creek	Apr-18	
MultiCare Deaconess Hospital	Spokane	WA-H_MultiCare Deaconess Hospital	Feb-19	
MultiCare Deaconess North Hospital	Spokane	WA-H_MultiCare Deaconess North Emergency Center	Feb-19	
MultiCare Valley Hospital	Spokane	WA-H_MultiCare Valley Hospital	Feb-19	
Providence Holy Family Hospital	Spokane	WA-H_Providence Holy Family Hospital	Aug-17	
Providence Sacred Heart Medical Center	Spokane	WA-H_Providence Sacred Heart Medical Center	Aug-17	
Providence Mt. Carmel Hospital	Stevens	WA-H_Providence Mt Carmel Hospital	Aug-17	
Providence St. Joseph Hospital	Stevens	WA-H_Providence St Joseph Hospital	Aug-17	
Capital Medical Center	Thurston	H_Capital Medical Center	Oct-18	
Providence St. Peter Hospital	Thurston	WA-H_Providence St Peter Hospital	Aug-17	

Providence St. Mary Hospital	Walla Walla	WA-H_Providence St Mary Hospital	Aug-17	
PeaceHealth St. Joseph Medical Center	Whatcom	WA-H_PeaceHealth St. Joseph Medical Center	Oct-16	
Pullman Regional Hospital	Whitman	WA-H_Pullman Regional Hospital	Oct-16	
Whitman Hospital and Medical Center	Whitman	WA-H_Whitman Hospital and Medical Center	Jul-19	
Astria Sunnyside Hospital	Yakima	WA-H_Astria Sunnyside Community Hospital	Oct-16 Mar-20	Jun-18
Astria Toppenish Hospital	Yakima	WA-H_Astria Toppenish Hospital	Mar-20	
Yakima Memorial	Yakima	WA-H_Virginia Mason Yakima Memorial Hospital	Apr-20	

Outpatient Clinics and Groups Available in NSSP ESSENCE

Facility Network	County or Counties	Clinic Practice Types
Astria Health	Yakima	Medical Specialty, Primary Care
CHI-Franciscan Health System	Clallam, King, Kitsap, Mason, Pierce, Tele-Medicine Clinics	Medical Specialty, Primary Care, Urgent Care
Confluence	Chelan, Douglas, Grant, Okanogan	Medical Specialty, Primary Care, Urgent Care
County Doctor	King	Medical Specialty
Cowlitz Family Health	Cowlitz, Pacific	Medical Specialty
Evergreen Health	King, Snohomish	Medical Specialty, Primary Care, Urgent Care
Ferry County Memorial Hospital	Ferry, Yakima	Primary Care
Grays Harbor County Public Hospital	Grays Harbor	Primary Care, Urgent Care
Harbor Medical Group	Grays Harbor	Medical Specialty, Primary Care
Jefferson Healthcare	Jefferson	Medical Specialty, Primary Care, Urgent Care
Kadlec Health System	Benton, Franklin	Medical Specialty, Primary Care, Urgent Care

Kaiser Permanente Washington	King, Kitsap, Pierce, Snohomish, Spokane, Thurston	Primary Care, Urgent Care
King County Public Health	King	Medical Specialty
Lake Chelan Community Hospital	Chelan	Primary Care
Lincoln North Basin Medical	Lincoln	Primary Care
Mason General	Mason	Primary Care, Urgent Care
Morton General Hospital	Lewis	Medical Specialty, Primary Care
MultiCare Medical Associates	Adams, Grant, Grays Harbor, King, Kitsap, Lewis, Pierce, Snohomish, Spokane, Stevens, Thurston, Whitman, Tele-Medicine Clinics	Medical Specialty, Primary Care, Urgent Care
Neighborcare Health	King, Thurston	Medical Specialty, Primary Care
Ocean Beach Hospital	Pacific	Primary Care
Olympic Medical	Clallam	Medical Specialty, Primary Care, Urgent Care
Overlake Medical	King	Medical Specialty, Primary Care, Urgent Care
Pacific Medical Centers	King, Pierce, Snohomish, Thurston	Primary Care
PeaceHealth	Clark, Cowlitz, San Juan, Skagit, Whatcom	Medical Specialty, Primary Care, Urgent Care
Pediatrics Northwest	Pierce, Thurston	Primary Care
Prosser Memorial Hospital	Benton	Medical Specialty, Primary Care
Providence Health and Services	Clark, King, Kitsap, Lewis, Snohomish, Spokane, Stevens, Thurston, Walla Walla	Medical Specialty, Primary Care, Urgent Care
Skagit Regional Health	Island, Skagit, Snohomish	Medical Specialty, Primary Care, Urgent Care
Skyline	Klickitat	Primary Care
Snoqualmie Valley	King	Primary Care
Sound Family Health	Kitsap	Primary Care
Swedish Health Services	King, Kitsap, Snohomish, Spokane	Medical Specialty, Primary Care, Urgent Care

The Everett Clinic	King, Snohomish	Medical Specialty, Primary Care, Urgent Care
The Polyclinic	King, Snohomish	Medical Specialty, Primary Care, Urgent Care
Tri-Cities Community Health	Benton, Franklin	Primary Care, Urgent Care
UW Medicine	King, Kitsap, San Juan, Snohomish, Thurston	Medical Specialty, Primary Care, Urgent Care
Valley Medical Center	King	Urgent Care
Virginal Mason Medical Center	King, Kitsap	Medical Specialty, Primary Care, Urgent Care
Whitman Medical Center	Whitman	Primary Care
Willapa Harbor	Pacific	Primary
Woodcreek Pediatrics	Pierce	Primary Care, Urgent Care
Yakima Valley Farmworker's Clinic	Benton, Franklin, Spokane, Walla Walla, Yakima	Primary Care, Urgent Care

Additional Resources

RHINO

- Community of Practice SharePoint
    - Conference presentation slide decks
    - Updated facility onboarding status sheets
    - Meeting slides (table of topics below)
- Description of RHINO data
- Requesting access to RHINO data
- Submitting data to RHINO

Topic	Month	Presenter
Wildfire Season Wrap-Up	October 2020	Kali Turner, MPH
Surveillance Support and Resources	July 2020	Kacey Potis, MPH CPH Cody Carmichael, MPH CPH Amanda Dylina Morse, MPH
COVID-19 and Suicide-Related Outcomes	February 2020	Natasha Close, PhD MPH Kacey Potis, MPH CPH
Measles, Mumps, and Exposures! Oh My! Finding Visits for Possible Notifiable Conditions Using RHINO Data	January 2020	Amanda Dylina Morse, MPH
Boo! It's the Flu! Monitoring ILI with RHINO	October 2019	Amanda Dylina Morse, MPH

Lewis County's Experiencing Integrating RHINO Data into their Daily Workflow	August 2019	Ed Mund Lewis County Public Health
Wildfires	June 2019	Kacey Potis, MPH CPH
Drowning and Submersion Visits	April 2019	Amanda Dylina Morse, MPH
Suicide and Self-Harm	February 2019	Alex Wu, ScD MPH Portland Area Indian Health Board
Monitoring Sexual Violence	January 2019	Amanda Dylina Morse, MPH
Substance Use Surveillance	October 2018	Natasha Close, PhD MPH
Homelessness	August 2018	Kacey Potis, MPH CPH
Validation and ESSENCE Updates	June 2018	Elyse Kadokura, MPH
Mass Causality Surveillance and Maps	April 2018	Natasha Close, PhD MPH
Winter Weather Surveillance	February 2018	Amanda Dylina Morse, MPH
Using Environmental Data in ESSENCE	December 2017	Marnie Boardman, MPH
ESSENCE Basics	October 2017	Amanda Dylina Morse, MPH
Using RHINO Data for Situational Surveillance	July 2017	Amanda Dylina Morse, MPH
Using Report Manager	May 2017	Amanda Dylina Morse, MPH
Building Syndrome Definitions	March 2017	Natasha Close, PhD MPH
Introduction to Monitoring ILI	January 2017	Natasha Close, PhD MPH
Syndromic Surveillance Overview	October 2016	Natasha Close, PhD MPH

ESSENCE Guidance

- APIs to pull data from ESSENCE into R
  - API Training Slides, January 2021
  - Using RStudio with ESSENCE APIs (NSSP)
  - API Training Script
- BioSense platform code of conduct (NSSP)
- Data Sharing Through Dashboards: The Who, What, Where, When, and Why (NSSP)
- ESSENCE Online Training (JHU)
- ESSENCE Training Webinars (ISDS)
  - Building queries (JHU, Wayne Loschen)
  - Using queries (JHU, Wayne Loschen)
  - Sharing queries (JHU, Wayne Loschen)
  - Using APIs (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
- ESSENCE Q&A Webinars (NSSP)
  - One, November 2017 (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
  - Two, March 2018 (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
  - Three, September 2018 (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
  - Four, March 2019 (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
  - Five, June 2019 (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)

    - Six, July 2020 (JHU, Wayne Loschen; NSSP, Aaron Kite-Powell)
- NSSP ESSENCE user guide (NSSP)
- Query writing tool (Kansas Department of Health and Environment, Zach Stein)

Syndrome Definition Overviews

- Case definition list (North Carolina Detect)
- Syndrome definition library (ISDS)
- Syndrome definitions (RHINO)

General Information on Syndromic Surveillance

- Best practices in implementation of Public Health Information Network Systems Nebraska
- ESSENCE, the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (JHU), system overview, 2020)
- National Syndromic Surveillance Program (NSSP) Homepage
- Redefining syndromic surveillance
- Syndromic surveillance for influenza in Washington State 2007
- The utility of syndromic surveillance

Success Stories (Data in Action)

NSSP maintains a list of success stories exemplifying syndromic data "in action" from Sites around the country. Below are a sample of them, which may be relevant for your practice.

Topic Area	Success Story	Group Responsible
Collaboration	Experts Collaborate to Develop a Standardized Syndrome Definition for Cold-related Illness	SDC CSTE
Disaster Response	Monitoring Population Changes for Emergency Management Support in Tennessee	Tennessee
	North Carolina Integrates Data from Disaster Medical Assistance Teams for Improved Situational Awareness	North Carolina
	Syndromic Surveillance Shows Medical Surge in Dallas–Fort Worth during Hurricane Harvey, 2017	Texas
Environmental Health	Chemical Spill in Kansas: Importance of Sharing Information Across Sites	Kansas
	Wildfires in California: A Critical Use Case for Expanding State Capacity and Sharing Information Across Public Health Jurisdictions	California
Healthcare Utilization	Alabama Department of Public Health–Syndromic Surveillance: Monitoring and Improving Data Quality	Alabama
	Syndromic Surveillance of Non-traumatic Dental Conditions in Idaho Core Areas	Idaho

Infectious Disease	Florida Department of Health Syndromic Surveillance Identifies Unreported Cases of Zika Virus Disease, 2016–2017	Florida
	Syndromic Surveillance Shows Rise in Emergency Department Visits after Case of Ebola	Texas
	Tennessee Uses Syndromic Surveillance to Identify Potential Cases of Mumps	Tennessee
	Syndromic Surveillance for Arboviral Diseases in Arizona	Arizona
Injury	DeKalb County, Georgia, Uses Syndromic Data to Identify Chlorine Gas Exposure at a Swimming Pool	Georgia
	Kansas Uses Syndromic Data to Improve Case Reporting for EVALI	Kansas
	Syndromic Surveillance Provides Critical Clues on E-cigarette, or Vaping, Product Use-Associated Lung Injury	Multiple
Mass Gatherings	How Oregon Tested its Mass Gathering Protocol and Mobilized Communities	Oregon
	Syndromic Surveillance for Mass Gatherings	West Virginia
Opioid Use	Louisiana Takes Action Against Drug Abuse by Sharing Syndromic Data	Louisiana
Suicide-Related Outcomes	Idaho Uses Syndromic Data to Help Understand Who Is at Risk for Suicide	Idaho